

ON THE RISCA EXPLOSION.

[READ BEFORE THE ROYAL SCOTTISH SOCIETY OF ARTS, EDINBURGH, MARCH, 1861.]
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On the morning of Saturday, Dec. 1st, an explosion of fire-damp occurred in the Black Vein of the Risca Coal and Iron Company's works at Risca, a village seven miles north from the shipping port of Newport, South Wales, whereby 134 persons out of 200 were killed.

At every recurrence of these disasters, involving as they do loss of life and property, public attention is strongly directed to them, and there usually follows an amount of correspondence in the public papers—comments upon the disaster, suggestions for the relief of the sufferers, and remedies for the prevention of such accidents. While a great proportion of these are unsuitable, it cannot be denied that some of them contain useful information, and that, at all events, their tendency is to do good. The suggestions of scientific men are always valuable, but if their attention were directed by practical men to the details of the circumstances which caused the explosion, instead of collecting them from the imperfect accounts in the press, they would scarcely fail to be more valuable.

With the view of bringing before the Society the facts necessary to elucidate an explosion of fire-damp in a mine, I have endeavored to collect and put into shape the various features of that which occurred at Risca, in the hope that I may be able to explain the subject so that scientific men may point out some department where science can be brought to bear on behalf of the poor miner in his dangerous toil, and also to insure to the capitalist greater security for the property he may have at stake; for while the general sympathy goes with the persons who are injured, or the relatives of those who are lost, we must never forget that the proprietor of the mine is also a great sufferer, and it often happens, while he bears his loss in silence, he has, in addition, to bear an amount of unrelieved obliquity. I propose, in the first place, to narrate shortly the usual mode of ventilating mines; next, to show the position of matters at Risca, the mode of ventilation adopted, and the manner in which it is carried out; then to offer some suggestions for improvements; and, lastly, to suggest a mode of providing for those deprived of the means of subsistence by these catastrophes.

All mines give out, more or less, two inconvenient products—gas and water. Gas issues from the pores of the strata as the fresh surfaces are exposed, and if allowed to accumulate becomes injurious or dangerous to those coming in contact with it. The gas so evolved is either carburetted hydrogen gas, or carbonic acid gas; but it is possible that other gases may exist, such as sulphuretted hydrogen, from the decomposition of pyrites. If carbonic acid (chokedamp) be emitted, it is hurtful, and often fatal, even while forming only 5 per cent. of the atmosphere which the miner breathes; but even in a smaller proportion it prevents his light from burning, and thus gives timely warning for him to leave. If, on the other hand, the gas present be carburetted hydrogen (fire-damp), from 6 to 20 per cent. of it in common air produces an explosive mixture, which in an unguarded moment comes upon the miner's lamp, and causes those fearful explosions which we hear of from time to time, and of which that at Risca was a prominent instance. Both the gas and the water, however, must be got rid of; the latter must be completely drained off, or it finds its level, and speedily puts a stop to all operations. The capitalist counts the cost, and acts accordingly, for the mine must be cleared of water. With regard to the gas exuding and filling the mine, the case is different. Gas does accumulate, but only to a certain extent will it find its level,—to a certain extent it can be kept confined, and hence when the arrangements for its complete withdrawal are found insufficient, instead of increasing or enlarging the appliances, many parties, in ignorance, thoughtlessness, or neglect, set about to find devices for confining it, and keeping only that part clear of gas where the workmen are engaged.

The mode adopted for clearing away these noxious gases from mines is to send through the mine such a quantity of atmospheric air as shall sweep away or dilute them to such an extent that they may be safely breathed. The quantity of air necessary depends upon the size of the mine, the number of men employed, and especially the quantity of gas eliminated; it varies from 4000 or 5000 cubic feet per minute up to 200,000 ft. Few of our Scotch mines require more than 10,000 cubic feet per minute, while the Hetton Colliery, Durham, requires 200,000 ft. To illustrate this more forcibly, a current of air passing through a common door-way, 7 ft. high and 3 ft. wide, at the rate of 2 ft. per second, or $1\frac{1}{4}$ mile per hour, will ventilate many Scotch coal mines. The current for ventilating the Hetton Mine would pass through this hall (supposing it to have a sectional area of 600 ft.) at the rate of 5 ft. per second, or more than 3 miles per hour. The current which passed through Risca would pass through this hall at the rate of four-fifths of a mile per hour, and this must be continuously kept up by artificial means, of which there are many varieties, such as fans, air-pumps, and the rarefying furnace. The shaft at which the air enters is called the downcast, the passages leading from it to the faces are called the intake air courses, and those to the shaft by which it ascends to the surface the return air courses, and the shaft the upcast shaft. These passages are, as often as possible, made use of for drawing the materials from the mine, and doors are put on when necessary to afford the required communication, and stoppings when communication is no longer necessary. The amount of exhaustion is sometimes as high as 4 in. of water, or 20 lbs. per square inch, when an air-pump is employed, but with the furnace it is little more than 1 in.; but as a general rule, whatever be the amount of exhaustion, the passages should be of such an area that the quantity of air required may pass through them at a velocity not exceeding 7 ft. per second. It follows that by increasing the area of the passages and the ventilating power any quantity of air may be sent through a mine.

We will now be prepared in some measure to understand the state of matters at Risca at the time of the explosion. The establishment for working the Black Vein consisted of three pits—first, an upcast pit, used solely for ventilating purposes, having an area of 135 square feet and 70 yards deep; next (about 400 yards to the dip), a winding shaft, of the same dimensions, 148 yards in depth; and, thirdly, a pumping shaft, which was not used for ventilation at all. These shafts passed through the Big Vein, a seam of 15 ft. thick, unworked above the Black Vein workings, and the strata from it down to the Black Vein was of soft brittle shale. The measures dip to the north-west at an average of 1 in 7, and the workings were all to the dip, employing about 200 men, who raised from 200 to 300 tons of coal daily, which were drawn up to the winding pit bottom by a steam-engine placed there.

The mode of working was that commonly practised in South Wales, and is found very suitable for the coal measures there. There was an incline plane, or slope, proceeding from the pit bottom of the winding shaft to the north-west. This slope was 650 yards long, and from it, at intervals of 140 yards, branches started off to the east and west. These were respectively called the "first east level," the "first west level," the "second east level," and so on. The last, the "fourth east," branched off 100 yards from the bottom of the slope. Each level worked out the block of coal to the rise of it in the following manner:—At intervals of 90 yards narrow mines, called cross-headings, were driven to the south up to the level above, and off one side of these cross-headings the levels were branched every 12 yards. The levels and cross-headings were merely preparatory works, the stulls being where the workmen were clustered; they were 5 to 6 yards wide, and were driven over within 12 yards of the next cross-heading, except one, which was holed narrow, for ventilating purposes. Narrow places, called spout-holes, were also put through at irregular intervals between the stulls, for the same purpose. The seam of coal was $8\frac{1}{2}$ ft. thick, in two or three parts, and had a very bad roof: $2\frac{1}{2}$ ft. of coal was left on for a roof in the main roads, and also in the stulls, in the first working, but so soon as these had advanced to their destination the workmen immediately commenced cutting down the pillars of the levels and taking down this coal. The brittle roof followed in some instances so quickly that the coal could not be got out, and being highly charged with inflammable gas, accumulations took place in the cavities so formed, which were with difficulty, if at all, removed by ventilation. Upon all the coal that could be safely worked being removed the entrances into them were built up, and they became unventilated gobs. The workings yielded gas, but not so much as some of the pits in South Wales, but the ventilation was much impeded by the brittle nature of the roof, causing frequent falls, which contracted the air-courses, unless regularly looked after.

The arrangements for ventilation were as follows:—The air descended the shaft through which the coals were drawn, and was at once conducted down the slope in its full stream to the first east level, where 3000 cubic feet was sent; the remainder went down to the fourth east and third west levels: 15,000 cubic feet per minute passing west, and 19,000 eastward, each current being guided along the horse-roads and round the faces by the usual contrivances of doors and stoppings, both currents joining near the top of the slope, and proceeding to the upcast shaft. The east current was about 3 miles long, the west current barely 1 mile. There were six sets of doors in the various levels; the cross-headings for the most part had double doors and in almost every stall was a framed door, and between every double door a canvas sheet. In most instances boys went with the hauliers to open the doors, in other instances regular trappers were stationed; thus they did not depend upon self-closing doors. The sectional area of the slope was about 59 square feet, and that of the main levels and cross-headings 42 square feet, and the current passed through them at from 8 to 13 feet per second.

The ventilating current was produced by a Struvs patent ventilating machine. It consists of two aerometers, resembling gasometers of a gas-works, working in an annular water space, covered in on the top, and fitted with valves for double action, the suction and being connected with a closed tunnel from the upcast shaft, and the outlet discharging into the atmosphere. When the aerometer ascends air is drawn from the pit, on its descent the air is expelled, and at the same time a fresh supply is taken in on the upper side. The two aerometers were each 18 ft. diameter, with a 6-ft. stroke, were driven eight strokes a minute by a high-pressure steam-engine, 18-in. cylinder, 3-ft. stroke, the crank making four revolutions for one complete stroke of each walking beam of the aerometer. The pressure on the boiler was 40 lbs. on the square inch. By calculation, the quantity discharged should have been 48,568 cubic feet, but it was never more than 42,000 feet: the average pressure, or drag, being about 1 6-10 inches of water, or 5 lbs. per square foot.

Naked lights were allowed down the slope, but in all other parts of the workings nothing but locked lamps were admitted, which were supplied by the proprietors gratis.

The management of the operations were intrusted to the following set of officers:—First, the manager, who did not go underground, nor does he appear to have had any knowledge of underground operations. Next, Mr. Harrison, the under-viewer, who had full control for the time being of the underground operations; he descended the pit daily. He had under him an overseer, who, again, had under his command firemen, whose duty it was to inspect and give out the Davy lamps to the workmen, to see to the regular circulation of the air, and to inspect the working faces, both before the men entered and during the progress of the work; and, taking everything into account, the discipline was very good, and with every desire on the part of the inquest to investigate it thoroughly, nothing very irregular was noted.

On the morning of December 1st last 200 men and boys descended the pit, between 5 and 8 o'clock. William Derrick, one of the firemen, who had been taken down the pit during the previous night, and who had examined all the workings with a Davy lamp previous to leaving, about half-past four o'clock, intimated this to the day firemen, who immediately descended, and proceeded to examine and give out the lamps to the workmen, who were waiting to proceed to their work. After all the workmen had been supplied, the fireman (Bray) went into the workings and examined them generally in the east side. Edward English examined the west side: he was killed by the explosion. He went into the first east level, and into the stalls in Nos. 11 and 12 cross-headings: there was nothing there to alarm him, but just when he was at No. 12 cross-heading the explosion took place. On coming to the treble doors, they were all broken in pieces. He then went down No. 2 heading into No. 2 level, but could not get into No. 3 cross-heading for a fall. He got on the top of it, and gave the men a light, and assisted in getting the bodies out. A collier, named Moses Short, on the morning of the explosion was at work at No. 1 dip heading, east level, felt a rush of wind, a ringing in his ears, and knew that an explosion had taken place; he instantly took his lamp, and with his son, a boy about 14 years old, made his way out of the pit by the main level, and went about 700 yards before he met the after-damp. He afterwards made his way out on his hands and knees, for he had no strength to walk. James Sims, another collier, was at work in the first east level; he remained at work till a quarter of half-past nine, when he knew of a change of wind, which almost extinguished his light, and a ringing in his ears, that an explosion had taken place. With seven other men, he snatched up his clothes, and made his way to the pit bottom and escaped, as did all his companions.

Thomas Bryan, a collier, said he was working in the east side when the explosion took

place. While working, his father said the fire had gone off, and he himself felt the wind and heard a ringing in his ears. His father's light was still burning, although the explosion had extinguished his. They went back as far as the turn-out, and then turned back to No. 10 heading, hoping to get out that way, but his father could get no further on account of the chokedamp. They both laid down together, and he felt like going to sleep, till fresh wind came, when he came a little to himself. His father meanwhile rolled himself down to No. 8. When the fresh wind came witness crawled about as well as he could: his father was afterwards found dead. The engine-crawled about the ventilating machine stated that he happened fortunately to be at the handle of the engine at the time, when all at once the machine went away with increased rapidity, shaking violently. He checked the engine at once, by shutting off the steam, and in a very short time it went on as usual, and continued without intermission for a fortnight after the accident, when it was stopped for a few hours to make some repairs to the engine. No part of the machine had sustained any injury.

Immediately on the explosion being made known parties went down the pit, to ascertain the state of affairs. It was found that of 200 persons who had descended the pit that morning 134 were missing. Ultimately it was found that 64 of these were killed by falls and by being burnt, and 70 by the after-damp. Mr. Harrison was among the first to descend; he found the west side separation-doors and east side separation-doors all right; he then went to the slope. The separation-doors at the first west were all right; he then went into the second east, and found his son, who was burnt, as well as some other parties there. On going into the second west he found the two doors gone; put a sheet up, which sent the air further down, and afterwards went to the third west, where he tried to get over the big fall but could not, there being no room; he returned, and tried to get into the fourth east, but could not for falls. When the ventilation was in some measure restored, it was found that heavy falls of stone had taken place, so that, although relays of men were sent in every six hours, the last body was not recovered before Feb. 5, nine weeks after the explosion. Traces of fire were found in the pillar workings of No. 3 heading of No. 4 east level, and large quantities of gas had issued, and continued to issue, from the roof in that quarter. There was also the appearance of an explosion of gas in No. 2 cross-heading, No. 3 west level; the timbers standing were charred to some depth. About 30 Davy lamps were missing; several were found unopened, although in good working condition; but one was found near to No. 3 cross-heading, No. 4 east level, with a small hole driven through the gauze.

[To be continued in next week's Mining Journal.]

Original Correspondence.

THE IRON MINES OF WILTSHIRE—A VISIT TO THE SEEND IRON-WORKS.

SIR,—The prodigious progress made in the manufacture of iron in England during the last 60 years is an admitted fact of the highest importance; the produce of England, Scotland, and Wales, according to the best authority, during the year 1860 having been upwards of 6,000,000 tons.

South Wales, the Forest of Dean, Shropshire, and Staffordshire were the districts which were first developed for the production of English iron, but more recently Scotland, Middlesboro', Northampton, and North Staffordshire have turned out their immense mineral resources in a metallic state, and in no small degree swelled the enormous aggregate represented in the great total production above mentioned. For the successful production of iron three things are absolutely necessary—fuel delivered at the works at a moderate cost; ironstone and limestone at the same easy rates; labour in the end invariably finds its own level in all districts, although works in new districts may pay a little more at first; this circumstance attracts the best men, and very good labour becomes indigenous to the newly-created market, and as time wears on this important element for the production of iron becomes plentiful and available at the average market price.

The WILTSHIRE PIG-IRON, during the last nine months, has created considerable interest in the consuming districts of the South Staffordshire market, having been consumed in very large quantities by several of the leading houses there; and this circumstance, together with the report made by Mr. S. H. Blackwell (one of the largest, and certainly the most practical and scientific ironmaster in South Staffordshire) on the mines and works at the Seend, induced the writer to visit the Seend Iron-works. The Seend Iron-works are situated close to the Seend Station, Great Western Railway, being connected thereto by a siding, which connects the pig bank of the furnaces with the main line, and the works are built at the foot of a hill which covers the beautiful little rural village of Seend. There are two blast-furnaces, built on the most modern principle, capable of making 300 tons of iron per week. The mine is lifted to the top of the furnaces by an ordinary but well-constructed hydraulic apparatus, warm water being supplied for the gravitating purposes of the machine from the exhausted condensing water of the blast-engine, without heating cost, which precludes the possibility of hindrance from freezing during the winter months. The furnaces are substantially built, and hot-blast is used. The blast-engine is 120-horse power, substantially erected on the most modern plan, working with beam and fly-wheel, and slide-valves, with an eccentric cam, being a condenser, working the steam at a pressure of 14 lbs., three boilers only of the ordinary size being used to generate the steam. The present make of iron at both furnaces is about 250 tons per week, and the quality is very good; the iron breaks strong, tolerably open-faced, with a white, thin, silvery-coloured belt extending round the circumference edge of the fracture. The No. 1 iron is very fine, breaking strong, and exhibiting a large crystalline fracture, and is evidently a very superior quality.

The works are admirably arranged, and the common charges were evidently successfully considered in their construction. The railway trucks, for instance, come up to the wharf within three yards of the end of the pig bed; the tops of the trucks are level with the pig bed, which renders the shipment of the iron remarkably inexpensive. I should estimate the cost of weighing and shipping the iron at 14d. per ton. The coals are supplied by railway at about 14s. per ton into the Bridge-house. The limestone costs 1s. 9d. per ton into the Bridge-house, and the iron mine is put into the Bridge-house at 1s. per ton by the contractor. This last item will appear incredible to gentlemen well acquainted with the iron trade. I confess that, until I visited these works, I could not myself believe it possible to put the iron mine into the Bridge-house at 1s. per ton; however, I have seen the mines with my own eyes, and my subsequent explanation of the *modus operandi* of getting and transit will explain and prove this most extraordinary fact.

The iron mine used here is of the oolite formation, and I have no hesitation in saying that it is the most valuable oolite deposit in the world: it is of the same character as the iron mines in the North of France; but the Seend Mines are 40, and in some places no doubt 60 feet thick, one uniform iron-bearing stratum; whereas, in France there is only 3, 4, or 5 feet of iron-bearing stratum, as the case may be. In France the mine has to be washed to get rid of a large portion of argillaceous matter which attaches to the lumps of oolite ore obtained from the mines. Here it is one solid mass of pure ore, and requires no washing. The formation here, as in France, commences about 1 foot from the surface, and this wonderful and valuable deposit is found only in the hill above referred to to the extent of about 150 surface acres, which contains about 25,000,000 tons of this valuable ore.

The works are commenced towards the summit of the slope; sixteen men and one horse get 800 tons per week, by driving a facing right into the works, and the ore is drawn by one horse to the top of a drum, which works a self-acting plane by means of a break; the fall wagon going down, and by its own gravitation bringing up the empty wagon again with a wire-rope to the top of the plane, where the drum and break is fixed.

The mine is got with a pick and shovel, no other more expensive implements being required, from the soft nature of the mine. This wonderful deposit is found under the entire surface of the hill above referred to.

The reader will now comprehend how the mine is put down in the Bridge-house at 1s. per ton. In this way, as before stated, sixteen unskilled labourers and one horse get 800 tons per week loaded into trucks, and bring it to the top of the self-acting plane which supplies the works. In France the cost of this same kind of mine, delivered at M. Lenard's great works, at Marquise, near Boulogne, is 94d. per ton.

The native mines delivered into the Bridge-houses of the furnaces of South Staffordshire at this moment cost quite an average of 15s. per ton, and it must not be forgotten that these are nearly worked out. The hematite ore, of which a very large portion is being used, costs 22s. 6d. per ton at the works in Staffordshire; and even at the famous works of Schneider, Hannay, and Co., Barrow, I believe the hematite ore is charged to their furnaces at 10s. or 11s. per ton. This firm, however, possess in their celebrated Parkes Pocket the richest and most valuable hematite deposit in the world. In Shropshire the iron mine costs pretty nearly the same as in Staffordshire.

By a comparison of the cost of production of the iron mines in the above districts, it will at once be perceived that the Seend Mines have unparalleled advantages over all others; and when the price of coke and limestone is taken into consideration, the conclusion is inevitable that iron can be made at these works 10s. per ton cheaper than in any other district in England; for it must not be forgotten that coke at 14s. per ton is quite as low as it can be obtained in the most favoured districts.

Mr. Blackwell, in his report, says that "when the present arrangements are completed iron can be made here at from 2s. to 4s. under 40s. per ton;" and if all the advantages above enumerated are taken into account, I see no

reason to doubt Mr. Blackwell's conclusions, and this opinion is based upon my own careful examination of the plant, and this magnificent deposit of ore, which I have endeavoured to describe. I have been formerly gratified by an inspection of the gigantic magnetic specular mines of the Island of Elba, Bonne, and Algeria, and iron mines in other parts of the world, but I confess that I have seen nothing, either in our own country or abroad, so finely deposited, and available for all practical and paying purposes, as the iron mines of Seend. The freight of this Seend iron to the iron-works of South Staffordshire is 7s. per ton, and as there is a market for an unlimited quantity there, even at the present low price, no doubt the rural beauties of the little village of Seend will soon be deteriorated by the smoke which must ascend in large quantities from more extended works, which will be immediately required to develop this splendid property.

The works were erected under the superintendence of Mr. Frederick Vernon Smith, the present manager, a brother of Mr. Josiah Smith, well known in the North as the builder of Schneider, Hannay, and Co.'s works, at Barrow, and I am bound to say the construction of these works do the Seend manager credit.—Wolverhampton.

SAM. GRIFFITHS.

CERTIFICATES TO UNDERGROUND MANAGERS OF COAL MINES.

SIR,—A few weeks ago a leading article in the *Colliery Guardian* referred to this subject, in connection with my name, and called upon me either to substantiate or retract what I had said in a lecture on "Explosions of Fire-damp in Coal Mines" (as published in the *Mining Journal* of March 16), by way of advocating the establishment of some effective means of examinations for men seeking appointments as underground managers of collieries. I confess that I was not a little surprised by an intimation in that article, to the effect that this examination scheme had not met with the approbation of the parties most interested in it; and this surprise arose out of a previous conviction that a very large portion of colliery managers themselves were sensible of the necessity there exists for some well organised means of preventing men taking upon themselves the weighty responsibilities of colliery management, without possessing either the necessary practical tact or the ordinary amount of knowledge required for directing the underground work with economy and safety. To substantiate what I have already said as to the importance of this matter, both in a utilitarian and humane point of view, I only need refer to a great many instances of most barbarous management of coal mines, as regards the sanitary and safe condition of the working places, which have come under my own eye. I have had, during the last eight years, rather uncommon facility for observing the very culpable carelessness there is manifested by many colliery owners as to the most important qualifications of their managers for conducting the operations in the mine with safety, and of the consequent want of fitness of their overmen for the work assigned to them by the arrangement of the manager. In many cases, instead of men being selected from the staff of workmen to fill the places of overmen, firemen, or other places of trust, because of their superior intelligence or practical ability, favouritism here, as elsewhere, commences a work of mischief and injustice, which may end in terrible death to scores, and the overturning of happiness and prosperity to many more. I could not be expected to particularise any case of colliery mismanagement simply for the purpose of strengthening the force of anything I may say in a letter on this subject, but I know that I only need appeal to the remembrance of anyone who may have visited a large number of coal mines in various parts of the country in support of what I have stated. If I thought that these examinations of managers and overmen were not likely to prove highly beneficial to both owners, managers, and workmen, I should most willingly and at once retract in everything that I have said in their favour. I do not advocate the institution of such examinations from a feeling of fear that Mining Schools may after all turn out a failure, for I have no such fear, but I certainly am actuated by an assurance that examinations of this class will be a means of inducing and urging miners to seek after the knowledge specially adapted to their requirements, and surely no one will find fault with such an aim as this, nor will anyone be prepared to deny that a proper qualification for the right discharge of the duties involved in underground management of coal mines is what should be imperatively required of a man before he is allowed to receive the appointment of responsible manager. I am no *mere theorist*; indeed, to me the abominable nonsense of what is so frequently advanced by letter writers about *theory and practice* is perfectly intolerable. I say that a man's practical acquaintance with the direction and efficient supervision of colliery operations is a qualification indispensable to his fitness for the safe and economic management of the mine; but then, this is not enough. Such a man should be ignorant of nothing which in his day is known to be conducive to the health and safety of the coal miner, and to the prosperity of the enterprising coalowner. Now, I am most thoroughly convinced that this examination scheme would be a much more effectual means of saving human life, and of improving the value of coal mining property, than anything that has yet been done towards the accomplishment of such a purpose. I am aware that anything in the shape of Government interference in matters of private enterprise is to be deprecated, as likely to injure very materially the progress and useful development of the particular department of art or manufacture in connection with which such interference is made; and I am also perfectly aware that there are a very large number of cases needing no such interference as this letter calls for, but I am also aware that a very large number of cases would be very highly benefited by it, and it is more than probable it would be a means of saving many a man from an untimely grave, and many a family from painful bereavement and misery. If I could but throw the sincerity of my advocacy of such a matter into these symbols or mediums of thought through the power of the pen, and cause them to live before the eye of every interested reader, it would be my greatest pleasure so to do. The subject, however, is nothing new; I, myself, wrote about it to the *Mining Journal* more than three years ago, and I am informed that it was much discussed 10 or 11 years ago, or just about the time when the recently-expired Act for the regulation and inspection of mines was being brought forward. What I have before said I repeat—that I shall at once cease to advocate such a measure when I am convinced that it is not calculated to benefit all the parties concerned. I should be the last of all in saying or doing anything which I feel to be prejudicial to the interests of the coal mining community.

MARK FRYAR.

VENTILATING OF MINES.

SIR,—The letter from Mr. H. W. Reveley, in last week's *Journal*, is worth some remarks in reply, to show the inconsistencies and strange notions of non-practical men. After some singular preliminary statements, the writer says that "the miner's safety-lamp has signally failed to prevent the recurrence of explosions." This I unhesitatingly deny; on the contrary, there are few mining engineers of any experience, and who have used the Davy or Stephenson, but can tell of cases in their own experience where it has prevented dangerous explosions. What does Mr. Reveley think of the occurrence at Ince Hall some months ago, or at Barnsley, or at —? But it is needless to multiply instances which are well known; and whatever may be the idea of imaginative outsiders, practical men do not hesitate to use it, and to place it in the hands of thousands of workmen as their best friend. Again, he goes on to say that "the only result of its use as a working light has been that of enabling the miner to work in an atmosphere highly injurious to the human frame." Now, is it not a well-known fact that fire-damp in the atmosphere of mines exercises no prejudicial effect on the health of the miner when in a proportion so large that the Davy would actually be melted by continuing to burn in it for a time; and the Stephenson is so constructed that only a small proportion of fire-damp mixed with the air at once extinguishes it? Why, then, these sweeping denunciations? Again, "the Davy must be entirely discontinued." Mark the absolute "must!" And for what reason? Because damage to a lamp is a "certain cause of death" in fiery mines. And so because we are exposed to great risk in dealing with our "intangible enemy," we must abandon our only safeguard.

Well, proceed!—Rules and regulations never did, nor ever will, prevent accidents in mines. Now, does any one for a moment suppose that a few hundred workmen can be placed in a position of danger and peril, and conduct themselves without rules and regulations, and yet avoid injuring themselves and each other. If there were no rules for the engineers, how many cases of over-winding should we see in a year? If the firemen worked without system, how many explosions? But Mr. Reveley goes on to say, "that the miner must be allowed to work in his own way;" and that "this great object is only to be attained by sinking upcast shafts, or large bore-holes, in such situations as to cut the highest level underground, at which point all the foul air and hydrogen would naturally accumulate. The upcast current, if sufficiently powerful, will cause the fresh air to flow down the downcast shaft." And so, as our miners cannot by means of ample and roomy shafts, and furnace power almost unlimited, produce a state of ventilation comparatively safe, we must, at the dictation of this Solon, at once reject these relics of the "beggarly origin" of collieries, and hasten to substitute "large bore-holes," and so obtain a current which, if sufficiently powerful, will actually cause the air to descend the downcast shaft. The current, we are next told, may be accelerated by furnaces, fans, or other mechanical contrivances. Very few putters, horse drivers, or wagon lads in England are there who could not have also given us this useful information. The furnace, too, must be in duplicate, and on the surface. What becomes of the heated column when the furnace is placed on the surface? Why, although you may thus produce a sluggish, feeble current with a very disproportionate expenditure of fuel, the result is so unsatisfactory that but few places in the present day are to be found where such a relic of its "beggarly origin" sticks to a colliery. Our writer informs us very candidly that his proposal is not a new one, and says the expense of its adoption has been urged against it. "But," says he, "this argument is worthless, as the produce of the miner's labour is thereby rendered more valuable." If that value is reckoned by

what it costs, I grant our learned friend is quite right; for certainly if a small field of coal has to be won, and on the present system a couple of shafts, at a cost of 12,000*l.*, would suffice, to increase such shafts in a four or fivefold degree would certainly increase the cost of working that little plot of coal. What a delightfully weighed argument; how nicely balanced in all its parts!

Our friend grandiloquently proceeds to state that he entirely sets aside the consideration of the cost of maintaining thousands of widows and orphans, which falls on the public. So, so; can it be possible that Mr. Revely fears or imagines that, as one of the public, he pays in the shape of maintaining widows and orphans, the victims of those terrible ogres—the colliery proprietors? In what way are the public called on to contribute to the support of these poor sufferers? Voluntarily, and in no other manner. But on what reason can he say that “though colliery owners may derive princely revenues from their mines, they never take that charge (the maintenance of the widows and orphans) upon themselves.” Only those who have lived in colliery districts can know the great responsibilities which, in the event of fatal accidents occurring, devolve on those princely owners, and how well, in most cases, they fulfil them. “They never provide,” don’t they. Let the noble conduct of Mr. N. Wood and partners, in the case of the Hutton explosion, give the answer to that calumny. After such a climax, why is allusion made to the misery of the collier’s life? Don’t I know hundreds—aye, thousands—of them myself; and are they, not as honest a set of good-hearted fellows as ever walked, eating, drinking, sleeping, and playing in the very fullest enjoyment of animal spirits, and not one in a hundred would ever think of changing his employment.

Now, Sir, in concluding this rather lengthy letter, let me remark that although discussion is a good thing for increasing information on any subject, yet from the hair-brained schemes put forward from time to time by dreaming schemers no more good can possibly accrue to miners than would from a scheme to light the mines by the “lockmaker’s bottled lightning.” Far be it from me to attempt to throw cold water on any plan likely to be of the least use in lessening danger to the miners; but when we find schemes put forward to force ever so many atmospheres pressure into what these schemers are very fond of calling the “various ramifications” of mines; to force high-pressure air in pipes into every working place; to lay gas-pipes to collect the gas, by causing exhaustion in the pipes, and so sucking the gas, but without disturbing the air, into the said pipes; for carrying down cartloads, boatloads, hundreds of tons of chemicals to decompose the gases; to light the mines in every working place with gas from the surface; to bore holes from the surface into the goaves and wastes, to let the gas ascend; and the thousand and one panaceas for accidents continually put forward by the sympathy-with-the-colliers-mongers, and every one of whom must fire his petty pop-gun of abuse at those Pharos of inquiry—the colliery owners, it makes one’s blood boil.

April 22.

A LANCASHIRE LAD.

DUTY OF SCOTCH PUMPING-ENGINES.

SIR,—With reference to Mr. Forrester’s remarks, in last week’s *Journal*, I beg to make the following statement:—

The object I had in view was to test the performance of our Scotch-made pumping-engines with those made in Cornwall, and working in Scotland with our Scotch coals. Without entering into the details of the construction, in order to account for the difference, I merely ascertained the quantity of water lifted 1 foot high by the consumption of a given amount of coal, which I presume (being all Scotch) will not differ much in quality, if any. I give four examples, and the results.

No. 1 is a three-valved beam-engine, made in Cornwall, from designs by Hocking and Loam, of Cornwall, both engine and pitwork fitted up by Cornish engineers, and worked for at least three years by Cornish engineers. The cylinder is 60 in. diameter; stroke, 10 ft.; speed of water, 30 ft. per minute; works one 15-inch plunger 18 4-6 fathoms; one 13-inch plunger 39 4-6 fms.; and one 11-in. bucket 18 5-6 fms.; it is the property of Sir George Suttie, of Preston Grange, and has been working at Dolphinstone Pit, eight miles east from Edinburgh, constantly for the last 13 years. The cost for boiler repairs during that period has only been 7*l.*

No. 2 is a direct-acting engine, with air-pump and condenser; the pump-rods are attached to the piston-rod; it was designed and constructed by Mr. Andrew Barclay, engineer, Kilmarnock. The cylinder is 80 inches diameter; stroke, 12 ft.; speed of water, 66 ft. per minute; and works one 27-in. plunger 41 fms.; one 27-in. ditto, 41 fms.; it is the property of the Coltness Iron Company, and has been working for the last three years at Crofthead Ironstone Pit, 20 miles south-east from Edinburgh.

No. 3 is a three-valved condensing beam-engine, by Jas. Aitken and Co., Glasgow. Cylinder, 60 inches; length of stroke, 8 ft.; speed of water, 44 ft. per minute; it works one 18-in. plunger 30 fms.; one 16-in. bucket 25 fms.; one ditto, 25 fms.; it is the property of Messrs. Merry and Cunningham, and has been working for two or three years at Stevenston Colliery, Ayrshire.

No. 4 is a direct-acting high-pressure engine, with condenser, but no air-pump; it was made by James Aitken and Co., Glasgow, from designs of Mr. David Landale, M.E., Edinburgh. The cylinder is 65 in. diameter; length of stroke, 12 feet; speed of water, 45 feet per minute; it works one 16½ inch plunger 50 fms.; one 16-in. ditto, 41 fms.; and one 16-in. bucket 30 fms.; it is the property of Messrs. Kidston, and has been working at Newton Colliery, near Glasgow, for about two years.

The duty of these engines is—[consumption of 112 lbs. of coal.
No. 1 (Cornish) lifted 50 millions of pounds of water 1 ft. high, by the
No. 2 (Barclay) lifted 18½ millions.
No. 3 (Aitken) lifted 15 millions.
No. 4 (Landale) lifted 13½ millions.
St. Vincent-place, Glasgow.

RALPH MOORE, M.E.

DUTY OF THE CORNISH ENGINES.

SIR,—The monthly reports of the duty of the Cornish pumping-engines show that within the last 20 years the average duty has declined more than 25 per cent.—from 65 to 52 millions. As this is a matter which must seriously affect the prosperity of the mining interest, I should be glad if you would permit me to say a few words with reference to it, with the view of drawing the attention of mining adventurers to the loss they are thus annually sustaining, since I am convinced that by a little exertion on their part it might easily be remedied.

The system of registering the number of strokes performed by an engine in a given time, and thence estimating the duty, was first introduced by Watt, and on the expiration of his patent the counters were removed from the engines. In 1812, in consequence of the increased consumption of coal, the counters were replaced on many of the engines, and the system of publishing monthly reports of the duty was introduced by Capt. Lean. The average duty was then about 17 millions, but in consequence of the competition excited among engineers it rose rapidly, until, in 1844, the average duty of 37 engines was reported at 68 millions. Since then, instead of a still further rise, the duty has fallen off to 52 millions, and is still declining. That less interest is felt in the performance of the engines is also shown by the fact that 50 engines were reported in 1841, but only 19 in 1857, and 24 in 1860, and of this latter number we may fairly suppose some to have been retained upon the list merely from habit.

Now, the question is, what are the causes of this retrograde movement, and how is it to be remedied? It is a question of some importance, not only on account of the increased cost of working the engines, but also for the sake of the celebrity which the Cornish engines have justly gained for economy of fuel. The primary cause seems to me to be the carelessness of the adventurers themselves as to the performance of their engines. Formerly, when legitimate mining was less rare than it is at present, when more of our mines were in the hands of men who intended to work them, greater attention was paid to this point, and the duty attained to was considered as a proof of the fitness of the engineer. Improved machinery, however, enables the makers to turn out better engines now than they did 20 years ago, and I can see no reason why, with a little care and attention, the duty should not be easily raised to its former standard. Cornwall may justly be considered as the birth-place and home of the steam-engine, and after maintaining its supremacy for more than a century, it certainly seems to me that some effort should be made by mine adventurers and engineers, if not to increase the duty, at least to keep it from declining. In every other branch of engineering great improvements are daily being made, and unless Cornishmen bestir themselves they will soon be left behind, and the Cornish engine, once famous throughout the world, be considered what Mr. Bourne called it a few years ago, “a remnant of engineering barbarism.”

M.

AURIFEROUS, &c., DEPOSITS IN THE NORTHERN PARTS OF THE BRAZILS—No. III.

SIR,—Generally, the planes of contact between the respective quartz bands and their enclosing rock are tolerably distinct, the quartz bands, for example, as seen in the face of the cutting, standing forth in bold relief from the other ground, so as to be distinctly traceable even on distant view; but, on a closer examination of detail features, it appears that the minute (laminated) “grain” of the enclosing rock bands is not always parallel to the corresponding parts of the side of the adjoining quartz vein; but that those sides in many instances are rugged and uneven, on account of being composed by a multiplicity of planes of a small area, joined with each other at various angles—flakes and minute outshoots of the laminated minerals frequently penetrating into the quartz at an angle with the general run, though apparently mostly parallel to the corresponding smaller planes; such laminae frequently thinning out into mere scales, whose presence is discovered by the quartz splitting more readily in a direction coinciding with their position. At other times such shoots of laminated mineral (talca, &c.) become highly ferruginous, ultimately changing into ferruginous incrustations connected with nests of gossan, intermixed with minute talcose or micaceous scales. The average direction, however, of all these

shoots, &c., may be said to coincide with the general run of the enclosing rock channel. The gossanous planes, or ferruginous incrustations, mostly appear to be more or less radiating from, or converging in, nests or clusters of gossan, &c.; and the gold, where occurring, to stand as it were at right angles with such planes. With respect to the general distribution of the precious metal throughout that rock channel, it is almost needless to state that exceedingly rich portions, such as, for example, the specimens which yielded 1600, 1500, and 1000 ozs., respectively, per ton, do not at all occur in the shape of continuous veins or strings, but are met with only now and then, forming as it were the nuclei of the richer zones. According to assays made of average samples, from which all fragments containing visible specks of gold were carefully excluded, the average yield of the poorer quartz and harder ground generally is 0.825 ozs. of gold per ton. Minute quartz grains, mostly rather transparent, are met with enclosed in the mass of the exceedingly soft and rotten rock with which the above quartz bands are interlaminated; and to the east of the above-described channel, in rock of a harder nature, there are noticed minute tapering stringlets of generally hard quartz, conforming in their direction of length to the general grain of the rock.

On careful consideration of all the phenomena and detail features observed in connection with those auriferous channels of rock, keeping before the mind’s eye their general structure and appearance as far as observable over a large area of surface, their composition, and the detail arrangement and minute structural as well as chemical mutual relation of all parts, I am forced to the conclusion that although the substance composing those quartz bands may be considered as being of a contemporaneous origin with that composing the enclosing nearly vertical bands of rocks) which deviate only 19° to 20° from the perpendicular, still the quartz veins themselves, as such, and in the shape in which they are found at present, are of more recent origin than the latter, being accumulations, by certain slowly acting agencies, in certain planes, of portions of the silicious components of the respective rock. On a future more appropriate occasion I shall attempt to explain more fully how certain phenomena in connection with the mineral composition of certain rocks may be made to furnish data of an apparently very reliable nature, by which the relative geological age, or rather the relative degree of development of certain non-fossiliferous rocks, and their associated, more or less commercially valuable, mineral segregations or deposits may be defined with a tolerable degree of certainty. There is every reason to believe that those components of the above-mentioned auriferous bands which now occur as oxides will, at a certain depth, change into sulphides, and that change will, no doubt, be accompanied by a corresponding increase in the hardness of the ground, although at present the latter is exceedingly soft, and even the quartz veins are so cut up by almost open cleavage fissures as to be broken down with great ease. With the exception of *pyritous ramifications*, there is reason to believe that the commercially profitable portions of the auriferous zone, both in the quartz bands and in the other ground, will not continue to any very great depth, a circumstance, however, which may be fully counteracted by due advantage being taken of the areal extent, the soft nature of the auriferous bands, and of the alluvial deposits.—April 24.

G. J. G.

SILVER MINING—THE SILVER VEIN COMPANY.

SIR,—I have already stated that I should not have troubled myself about the proceedings of this company, or have written to you on the subject, had it not been for the recent extraordinary statement of “Chemists,” and another correspondent, maintaining that by the new process ore that contained only 13 ozs. of silver per ton in its normal state, was made to produce 113 ozs. of silver per ton!

We remember what was said, and most obstinately argued, by the promoters of the Britannia and Poltimore Gold Companies—that the gossan was not only rich in gold, as proved by constant assays and experiments, but also that by the new process all the precious metal would be extracted from it. I would recommend the shareholders of this company to procure the *Mining Journal* of June 24, 1854, in which they will find recorded the final issue of the forementioned discreditable undertakings.

I am willing to believe that the Chairman and the directors of this company think that they have a rich silver mine, and that Mr. Squire will obtain the large results he has promised; but until they are realised by the treatment of tons of ore, and not by mere assays of samples, I would advise them to proceed quietly, and not again publish such statements: as they not only tend to bring ridicule on themselves, but on English enterprise in general. Sometime ago Mr. Squire undertook to make quartz containing ½ oz. of gold per ton to produce 20 ozs. of gold per ton—I hope he will be more successful in making silver than he has been in making gold.

I am glad to learn that Mr. Gould ignores now the “silver augmenting process,” and that the directors only intend to extract the amount of silver the gossan may contain in the vein at Lostwithiel. I wish them every success; and I hope the results on the large scale will satisfy the shareholders, and be found equal to the representations made at the meeting by Mr. Gould. I beg leave to make the following extracts from Mr. Gould’s own statements, as reported in the *Journal* of March 23.—“The ores in their natural state had been proved to contain respectively 12, 19, and 54 ozs. of silver per ton. But when those ores had been operated upon in small quantities by Mr. Squire they produced 50, 104, 115, and 126 ozs. of silver.” A similar statement was made some time ago at the London Tavern, when Mr. Squire was operating on gold quartz, from which fabulous returns were anticipated by the credulous public. Mr. Gould said “There could be no question that Mr. Squire had operated upon a large quantity on Wednesday last (March 13), and the probability was that in a few days they would hear that 10 tons had been successfully reduced.” Is Mr. Gould prepared to prove the correctness of the foregoing statement, and that 10 tons of gossan, which contained in its natural state 120 ozs., produced by Mr. Squire’s process 500 ozs. of silver? At the conclusion of the meeting Mr. Gould further remarked “an important fact”—“the first sample of the ore in its natural state produced but 13 ozs. to the ton,” “but when the second sample was shown after Mr. Squire had operated upon it, produced 113½ ozs. of silver to the ton.”

I trust Mr. Gould will be kind enough to explain the meaning of the above observations, if they are not intended to represent an increase in the amount of silver, as compared to the assay contents of the ore in the natural state. In whatever state the silver may be in the raw material, sulphide, chloride, oxide, or metallic, a careful assay will produce the total contents—hence the additional product of silver can only be obtained through the medium of an “augmenting process,” by means of the oxide of lead employed in testing the samples.

It is now upwards of a month since it was said that 10 tons had been reduced, but we have not heard what were the results. According to the last report, 20 tons had been prepared for treatment; I presume, therefore, nothing on the large scale has been yet attempted. I feel no desire to know the mystery of Mr. Squire’s process, or the product of the ore; but as a practical man, acquainted with the business, and who feels an interest in the welfare of all legitimate English enterprise, I should be glad to find that this company is not a myth, but a *bona fide* undertaking, be the ultimate result what it may.

Your correspondent refers to what is doing in “the Cordillera,” and says that the furnaces there “are built so as to smelt only 1 ton each per day, and they last in good condition only from 12 to 15 days;” and that bulk does not mean 10 or 20 tons. I do not know what “Cordillera” Mr. Gould alludes to, nor yet the furnaces he speaks about, but I am able to inform him that I have lived in the Cordilleras of South America upwards of ten years; developed silver mines, erected silver-reducing works, and reduced therein many thousands tons of silver ores of all classes, and that I frequently sampled and reduced 10 and 20 tons and upwards at a time. I have often reduced about 20 tons of concentrated ore per week. I am well acquainted with the patio amalgamation, barrel amalgamation, smelting, and assaying of silver ores, in America and Europe, hence my surprise at Mr. Gould’s statements, not only at the meeting, but also in his letter in last week’s *Mining Journal*. It is very evident that your correspondent has been misinformed of what is doing in Mexico and on the Cordillera; but I trust he has much more accurate knowledge of the proceedings at Lostwithiel, to ensure the production of silver at a remunerative rate, than he has of our silver establishments in South America.

If Mr. Gould will favour us with another communication, I hope he will be able to inform your readers what the 20 tons of the prepared ore has produced in silver. In the mean time, I recommend a careful perusal of the *Mining Journal* of June 24, 1854. Probably, Mr. Gould is not acquainted with the proceedings of the Poltimore Company, and how the directors at that time were led to expect as great results as those now anticipated at Lostwithiel from similar kind of assays and experiments.

I am sure Mr. Gould and the shareholders will find the *Mining Journal* from January to June, 1854, very instructive during the progress of their trials at Lostwithiel.

EVAN HOPKINS.

NATURAL OXIDE OF SILVER.

SIR,—I read with much pleasure the letter published in last week’s *Journal*, signed “Science without Prejudice,” and willingly admit that, so far as some of the opinions are concerned, I should be ready to express myself even more strongly than the writer referred to. For example, I contend that the letters on the subject of silver oxides, with which your columns have teemed, have been not only “amusing,” but also highly instructive and valuable. I admit, moreover, that “little people will occasionally plunge blindfold into print to keep themselves before the public,” but I know also that, judging from the complaints of *sensu* themselves, whilst pretenders occasionally annoy really scientific discoverers by their ignorant jeers, there are a great many men who have spent their lives in the study of science, and who have attained a by no means unenviable reputation, who are ready to sacrifice time, valuable to them, in order to propagate the truth to the extent of their abilities; not because they wish to keep their names before the public, but because they have learned, and learned to respect, the truth that “knowledge is an article with which we can afford to be charitable, but however much of it we give away we retain the same amount as ever for ourselves.” Your correspondent may rest assured that the true assent will ever find a place amongst the most modest; that he will ever be ready to learn, and to admit any error he may entertain upon reasonable proof being given of his error; and that with respect to the whole of the knowledge he possesses (no matter what may have been the labour or expense of attaining it), he will be ready to say—

“Come sit ye down upon this pleasant bank,

And drink with me of these refreshing streams.” But although I agree with some of your correspondent’s opinions, I certainly cannot consent to that unphilosophical classification which would include within the same species the alchemists I have already mentioned and such men as Davy, Faraday, Dumas, Rose, and Berzelius. I agree with Prof. Owen that the brains of all men are so far similar as to present a distinct line of demarcation between the lowest man and the highest ape, but to such different degrees may the brain be developed that I could scarcely condemn the man who should maintain that the “order” in the animal kingdom to which we belong is capable of subdivisions into families, genera, and species.

The great error into which “Science without Prejudice” falls is this:—He argues, “As new discoveries were always received with caution, why may not the recent alchemical theories with respect to the production of silver prove correct?” but forgets to enquire into the character of the two classes of discovery, which, if carefully done, will at once remove all erroneous impressions.

The discoveries which were received with suspicion, and afterwards proved to be correct, were of this nature:—A given compound material, consisting of 100 parts, was analysed and the nature of (say) 90 parts was explained; the remaining 10 parts comprising elements unknown to the chemist, were therefore, considered as worthless, and so described. Davy, Rose, Faraday, and all the great chemists who have flourished either in this or other countries, confined their efforts to bringing the science of analysis to such a nicety that every part of the 100 parts should be accounted for: let us examine what others propose.

The discoveries which (and in this I believe the entire scientific world will agree with me) are, and I contend should be, received with suspicion until proved to be correct, are of this nature:—A given compound material is found upon accurate analysis to contain in each 100 parts 100 parts of elementary substances, each one of such parts being a well-known element (say, for example, copper, 20 parts; silver, 10 parts; sulphur, 30 parts; water, 10 parts; silica, 30 parts; alumina, 10 parts; &c.) yet a discovery is declared to have been made by which 20 parts of silver can be obtained from the same compound material. Now, as 100 parts have already been obtained from the 100 parts, whence, the true chemist asks, comes the additional 10 parts of silver? It can only result from the transmutation of some other element shown by the analysis; and as the theory of transmutation has been proved most incontestably to be fallacious, I will rely upon the judgment of any rational being, whether chemist or totally ignorant of chemistry, to say whether a discovery claimed upon such grounds can be other than fallacious.

SIR.

SPANISH MINING ENTERPRISE.

SIR,—The letter which appeared in last week’s *Journal* on this subject, from your esteemed correspondent, Mr. Evan Hopkins, agrees so exactly with my own views and experience, that I can most cordially endorse every sentiment it contains. It is an old axiom, “If you are to know people well you must live with them;” and so in reference to mining countries, if a proper knowledge of their resources is to be obtained. I have been a resident in the country, and am, therefore, no stranger to the value of its mineral deposits. There cannot be two opinions as to the practicability of English capitalists reaping a good harvest by engaging in Spanish mining, provided the cautious policy, so sensibly pointed out by Mr. Hopkins, is fully acted upon. And I am decidedly of opinion that both mining and manufacturing operations in Spain will very greatly increase, as it possesses elements of a sound and desirable character for the employment of capital.

As a proof of the immense results to be obtained from successful mining in Spain, I may give one instance, among others, that came under my own observation, where for a considerable period the weekly profits averaged 2000*l.*, and when I left the country the concern was still in a prosperous condition. Then as to manufacturing operations, especially as regards the iron trade, I was credibly informed during my residence in the country that so lucrative was this branch of business that in one establishment alone the proprietors had accumulated wealth to the extent of one million pounds sterling. Surely such facts carry with them their own convictions, and go far to fix the basis for an energetic prosecution of such important undertakings.

But I would certainly advise a careful inspection of any property that may be taken in hand by English companies, prior to any definite arrangement being made; for although Spain abounds in mineral wealth, there are nevertheless numerous perennials held by men of small means, who will gladly dispose of their interest in them upon apparently favourable terms, whereas in reality such properties would be dear as a gift. There are, again, individuals who hold similar properties, the true character of which is no secret to them, but who nevertheless seek to make a prey of a likely purchaser. Other properties, again, are situated too far in the interior of the country, and are, therefore, subject to serious expense, and must remain so until better roads and a more feasible mode of transit is given to the interior. Nevertheless any quantity of really good mines, and conveniently situated, of copper, lead, or iron are to be met with, but great tact and ability, as well as good judgment and discrimination, should be brought to bear upon any treaty that may be made with Spaniards. Let a proper selection be made, and all arrangements in connection with it be concluded satisfactorily. As the first step in the way of progress, let good practical managers be appointed, who will feel an interest in the discharge of their important duties; let a judicious and economical supervision be exercised both at home and abroad; and, above all, let a good commanding capital exist, and no association that can be formed need fear results, but may really and assuredly look for very handsome returns for their investment.

April 24.

T.

PRACTICAL MINING—SPALLING.

SIR,—Mr. W. Thomas, in his communication to you, bearing date April 8, and which appears in the *Journal* of the 13th, thinks he will be able to prove that the Preparation of the Journal and Smyth is not a new invention, and that the machine in question was at work in the Kenmare Mines as long since as 1853, and refers to drawings by Mr. R. Stevens, engineer, of Cork, which may be seen at 33, Great Winchester-street (the offices of the Schull Bay Mining Company). Now, Sir, I have this day been kindly allowed by Mr. Battye, the secretary, to inspect the said drawings, and most unhesitatingly say the machine there described bears no resemblance whatever to that invented and patented by Messrs. Wasley and Smyth; it being, in the first place, much more intricate, and in the next (which is a serious objection) far more costly. Without troubling more on your valuable space than I can help, I will merely say I have been questioning to prepare drawings of the latter invention, so that a wood-cut may appear in the *Journal*, and your subscribers and readers will then be able to judge for themselves as to the merits the one possesses over the other, and whether the machine of which I thought proper to speak and recommend is in any way a piracy on Mr. Thomas’s.

In conclusion, I would add that I hope Mr. Thomas will now perceive his error, and admit some little credit is due to Messrs. Wasley and Smyth for their new invention.

April 23.

C. B. BESSEY, C.E., and Min. Sur.

GREAT RETALLACK MINING COMPANY.

SIR,—“One of Your Old Subscribers,” who writes upon the subject of Great Retallack in last week’s *Journal*, may not be aware that at the meeting held in December the Manager calculated that for the three months following he should be able to sample 500 tons of ore, and which in the ordinary course of things would have been sold before the meeting day in March. The severe frost, however, put a stop to dressing operations, so that the first 500 tons were not sampled till a month after the usual time; and to keep faith with the shareholders 1000 tons were got ready for the next sale, about a month after the delayed sale of the first 500 tons. Had 500 tons only been sampled the second time, any one acquainted with the feeling in the market may easily imagine the reports to which it would have given rise. In reference to the dressing of the ore, and other matters referred to by your correspondent, I have received the following explanation from the Manager:—

“If our blende were hard and as pure as in most mines we could make it perfectly clean; but the public generally are not aware that from one-fourth to one-third of our blende is raised as fine as sea-sand, with white iron through it, and is most difficult for dressing, the specific gravity of the two being so near alike; indeed, cannot be made quite clean when done as well as possible. Then, the roughest of it has small veins or strings of white iron through it, a great deal of which we break off with hammers, but much remains that cannot be separated even if crushed fine, for the reason before given; and into the bargain, the buyers do not care to purchase it in the fine state, if ever so clean. Our dressing costs us 5*s.* 6*d.* per ton; and we are now making a parcel, of which we have now above 50 tons, costing us 8*s.* per ton in dressing. This is the best of the blende, or that most free from foreign matter, made as clean as possible. We made a parcel like this once, and only got the same price as when mixed with the coarser work. We throw out about one-sixth; and the enclosed calculation will show that we must get 4*s.* per ton for it to be equal to 40*s.* per ton in the state we generally make it:—

Six tons, at 40 <i>s.</i>	£12 0 0
Dressing cost, at 5 <i>s.</i> 6 <i>d.</i>	£1 13 0
Carriage.....	1 13 0
Gates, 4 <i>s.</i> ; dues, &c., 3 <i>s.</i>	0 7 0
Weighting and shipping.....	0 2 0 = 3 15 0 = £3 5 0
Five tons, at 40 <i>s.</i>	£12 0 0
Dressing cost, at 5 <i>s.</i> 6 <i>d.</i>	£1 0 0
Carriage.....	1 7 6
Gates, 4 <i>s.</i> ; dues, &c., 3 <i>s.</i> 6 <i>d.</i>	0 5 10
Weighting and shipping.....	0 1 8 = 3 15 0 = £3 5 0

The writer in the *Journal* does not do us justice in stating that we only sink a fathom a month, without giving all the facts. Since September we have sunk the shaft 5 fms. through hard capels, and driven cross-cut of 12 fms. through a similar rock. This was unexpected to us, as we calculated on having the blende under the capels as in the upper levels. Well, seeing the blende had gone off so far from the shaft, we have gone up to the 20, and now about completed a shaft all the way from this level, on the ledge, to the 35, full 15 fms., so that we have done a good bit of sinking in the time; we shall now make good progress. Ours is not like an ordinary sink hole, and requires a great deal of planning to lay open the ground properly. Here in simply sinking 5 fms. we have the blende shifted 15 fms. south; and in driving the levels we find the capels so thrown about the shaft that a stranger could hardly find it.” A LARGE SHAREHOLDER.

ST. AUBYN MINERAL COMPANY.—The Vice-Warden of the Stannaries of Cornwall will settle the list of contributors on May 6.

CARDIFF AND CARPHELLY IRON COMPANY.—Mr. Commissioner Fonblanque will make a call on the contributors on May 7.

Meetings of Mining Companies.

PENDEEN CONSOLS MINING COMPANY.

A meeting of adventurers was held at the London Tavern, Bishopgate, on Thursday, Mr. W. BAWDEN in the chair.

Mr. D. COHEN (the secretary) read the notice convening the meeting, and the minutes of the preceding one, which were confirmed. The report and statement of accounts, of which the subjoined is an abstract, were then submitted:—

Balance last audit	£1826 15 1
Ore sold, and carriage	1327 0 0
Sundries	29 16 6=£3183 11 7
Mine cost and merchants' bills, Jan. and Feb. ..	£ 949 10 7
Lords' dues on ore sold	62 8
Committee and secretary	21 0 0
Sundries	5 1 8= 1066 10 3
Leaving credit balance	£2126 1 4

The profit on the two months' working was 200l. 6s. 3d. The only liability was the lords' dues, 244l. 8s. 11d., to meet which there are assets amounting to 2260l. 10s. 4d., and comprising—cash at bankers (including 700l. on deposit), 1005l. 12s.; ore bills, 1827l.; calls in arrear and sundries, 271l. 18s. 3d. The club account amounts to 50l. 4s. 3d.

The following report was then read:—
April 23.—Since the last general meeting the engine-shaft has been sunk 5 fms.; the lode is 2½ ft. wide, but at present is rather disordered, and not of much value. The 118, north of shaft, has been driven 5 fms. 4 ft., and 5 fms. of lode taken down, which has yielded 5 tons of ore per fm., worth 20l. per fm. The 118 south is driven 4 fms. 4 ft.; no lode taken down. The stopes in back of this level, north of shaft, are worth 5 tons of ore, or 20l. per fm. In No. 1 stope, south of shaft, the lode is 3 ft. wide, worth 8l. per fathom. The 106 end, south of engine-shaft, driven 3 fms. 2 ft., and a bargain of lode taken down; the lode in this end is 3 ft. wide, composed of quartz, iron, copper, tin, and muddle, but not to value. The 106 north has been driven 5 fms. 2 ft., and a bargain of lode taken down, which has yielded 4 tons of ore per fm., worth 16l. per fm. The stopes in back of this level are worth on an average 12l. per fm. In conclusion, we beg to say our stopes are yielding their usual quantities of ore, and we think the prospects of this mine have never been better than at the present time.—WILLIAM EDDY, JAMES WARREN.

The CHAIRMAN said that, so far as the report went, they were getting on in a regular way, and their prospects were of a very encouraging character. Since the last meeting they had got down 8 fms., and they were now within 3½ fms. of the next level. There was no deficiency of ore in the mine, and if they went on improving in quality they would have a very valuable property. They had now the draft of the new lease, including the Crown and the Duchy grants, as well as those of Mr. Horace, and this had only now to be engrossed and signed, and then all would be settled. In the 70 they had only a few fathoms to drive to reach the great Pendeen lode, and as soon as the completion of the lease enabled them to open it, they hoped speedily to attain the lode.

A SHAREHOLDER enquired whether they were east and west lodes?
The CHAIRMAN said that they were. As to the general appearance of the mine, he might remark that they had got so far that he might congratulate the shareholders upon their position. They were not likely to meet with any stoppage from any source whatever, and no doubt at the next meeting they would be able to talk about a dividend.

Mr. BIRDSEY remarked that there were three mines all of a row, and that there was in the middle; the other two had been paying dividends for some years, and were likely still to continue; whilst the Pendeen adventurers were just reaching their riches, so that he should estimate the Pendeen to be equal in value to the other two combined. He had always been very sanguine with regard to the prospects of Pendeen—perhaps too sanguine for his own pocket—and had always advised his co-adventurers to hold on; he trusted they were now beginning to see how far he was right, and he would leave them to act for themselves.

Mr. R. McALLAN admitted that there had been some little disappointment, but was fully assured that the mine had been one of the most judiciously managed of any with which he had ever been connected.

The report and accounts were then received and adopted. Messrs. W. Bawden, E. Clifford, W. Birdsey, and R. Hallett, were re-elected the committee of management until the next meeting; and thanks were voted to the Chairman and committee. The meeting then separated.

EAST WHEAL GRENVILLE MINING COMPANY.

An ordinary general meeting of proprietors was held at the company's offices, George-yard, Lombard-street, on Tuesday, Mr. F. R. WILSON in the chair.

Mr. J. WATSON (the secretary) read the notice convening the meeting, and the minutes of the last were read and confirmed. The accounts showed:—

Balance last audit	£206 8 1
Calls received	633 19 3=£840 7 4
December mine cost	116 9 4
January ditto	132 2 0
February ditto	132 4 10
Balance of Jan., Feb., March, and April bills ..	173 19 7
Ditto May, June, July, and August bills	110 17 6
Ditto Aug., Sept., Oct., and Dec.	5 10 8
Sundry accounts	3 2 3= 674 5 9
Leaving credit balance	£166 1 7
The balance of liabilities over assets was 409l. 4s. 6d.	

The agents' report was then read, as follows:—
April 20.—The engine-shaft is sunk 5 fms. 5 ft. 6 in. below the 25, in which distance the lode has varied from 2½ to 4 ft. in width, composed of a beautiful gossan, prisms, and quartz, yielding 14 tons of ore per fm., which we have valued at 10l. per fm. During the last 5 or 6 ft. sinking the lode has very considerably improved for copper; it is now from 2½ to 3½ ft. in width of gossan, quartz, prisms, and ore—worth for copper 30l. per fm., and tin about 6l. for length of shaft. There is a great quantity of water flowing from the lode, which necessarily carries away the black or light ore; nevertheless, it is as pretty a lode as any man can wish to see at this depth; and, if we may judge from appearance, we think it is improving; the lode is getting more settled. We calculate by the middle of May to be at the 35; sinking by 12 men, at 20l. per fm. The 25 is extended east of the shaft 14 fms. 6 ft. 11 in., the first 11 fms. of which the lode has varied from 1 to 2½ or 3 ft. in width, yielding a fine stuff, valued at from 5l. to 7l. or 8l. per fm. when we met with a small cross-course, since which time the lode has been in the vein. It is now small, but which we are expecting will open again shortly; driving by four men, at 4l. 10s. per fm. The 25 is extended west 14 fms. 1 ft.; the lode having also varied from 1 to 4 ft. in width, composed of prisms, gossan, quartz, and tin, worth from 1l. to 6l. per fm. In the east the lode is 2½ ft. wide, presenting very much the same character it did in the shaft prior to meeting with the ore; hence we are calculating this is going over a run of ore ground, driving by four men, at 3l. per fm. We have raised a large pile of tin ore, which we estimate will yield about 9 tons of tin. We had no time to dress any of the tin ore or frame tin (I will wire the quantity and amount sold on Tuesday morning in time for the meeting); but we hope during the next quarter to have 2 tons for sale. We sampled on Tuesday (computed) 9 tons of ore, it being mixed with tin; and the water having carried away a great deal of the black ore, we do not expect it will make a high produce; but as we go down we think this will improve. It will be premature to estimate the quantity of ore we shall raise, but if the shaft continues, and we open two ends, there is no question but that we shall raise a good pile of ore. The number of hands employed are—underground, 20 men; at surface, including engine-men, &c., 9 men, 3 boys, and 7 girls; and, in conclusion, we are proud to say, seeing the very pretty lode we have discovered in the shaft, and the 25 east and west (neither of the rich mines in the district having presented a prettier thing at the depth), that our chances of success are, indeed, of a high order; and our only object must be to push the shaft and ends on with the utmost speed.—GEORGE R. ODGERS, WILLIAM BENNETTS.

The CHAIRMAN having moved the adoption of the report and accounts, congratulated the shareholders upon one important fact, which was that, however the value of the shares had fluctuated during the past few days, the numerous agents who had inspected the property on behalf of all kinds of interests had, without a single exception, given an unequivocal opinion that East Grenville was one of the most promising mines in the Basset district. With regard to the committee having been instructed to obtain a 60-in. cylinder steam engine, he might say that the committee, state that up to the present time they had not met with a suitable engine, but that, in the meantime, a new plunger had been put in, which had had the effect of reducing the number of strokes of the present engine from 13 to 3½ strokes per minute. The committee still contemplated getting another engine, although it was not at present necessary.

Mr. PETER WATSON enquired how it was that Capt. Odgers, in the report just read, valued the lode at 30l. per fm. for the whole length of the shaft, but had hitherto valued it only at the same amount per fathom?

The CHAIRMAN replied that he had only seen a report from Captain Odgers valuing the lode at 30l. per fathom; and although the actual words, "the length of the shaft," had not, perhaps, been previously stated, yet there could be no doubt, from the tenor of the reports, that Capt. Odgers intended to convey that such was the case.
Mr. PETER WATSON had asked that question for the benefit of the shareholders, for in the report which appeared in the Mining Journal of Saturday the lode was valued at 30l. per fm. only.
The CHAIRMAN said that it was quite clear, from the report just read, that Capt. Odgers must have intended to convey that the lode was worth 30l. per fathom for the length of the shaft.
Mr. LELAND here produced a private report, which he suggested should be read for the information of the meeting.

Several shareholders hereupon expressed their opinion that, if one report were read, the whole of the reports should be read.
Mr. J. Y. WATSON, F.G.S., presumed that the report referred to was of too favourable a character to suit some people, and hence the objection to its being read.
Mr. LELAND said the report was of an exceedingly favourable character, and that it was from an agent whose statements could be implicitly relied upon.

Capt. F. PRYOR said that was the first time he had had the pleasure of attending a meeting of that company, and upon that occasion he wished to make a few remarks upon the advisability or otherwise of erecting another and a more suitable engine. Now, he had not the least doubt that East Grenville would become a very valuable property, and, therefore, he was strongly of opinion that it should be energetically developed. Regardless of the price of shares, or of "bulls" or "bears," he contended that a suitable engine should be erected forthwith, if for no other reason than that a great saving in the consumption of fuel would be effected. Notwithstanding any opinion that had been expressed to the contrary, he was prepared to prove that the opinion of Capt. Odgers was correct; that the ore was capable of bearing a higher percentage; and to effect that object an engine was absolutely necessary. Seeing that their neighbours, West Basset and South Francis, never presented such indications at the same depth as were now presented at East Grenville, it was a matter of actual necessity, and at the same time would be the means of effecting a great economy, that a suitable engine should be erected. Another question was, as to the taking away of the lode in the shaft. Now, if they sunk and took away the lode from the side, they would find the quality of the ore, instead of going away in the water, would be found in the assay—in fact, he was prepared to prove that the water which had washed the ore in East Grenville during the past week would make a better produce than the ore itself. In a mine like East Grenville, producing black ore, shareholders should not be too desirous of having weekly reports. He was convinced that East Grenville would prove itself to be a very valuable property.

The SECRETARY said that he did not think the low produce of the ore arose so much from the fact of the black oxide being washed away as from the presence of tin in the ore, which destroyed the produce for copper; but as the lode was sunk upon the tin would wear out, and the copper become of better quality.

Capt. PRYOR contended that the value of the copper was in no way affected by the tin. He was prepared to prove that the best of the ore was washed away by the water, which had been proved by the assay of the water.

The CHAIRMAN, in answer to Capt. Pryor's remarks with regard to the present steam-engine, stated that the consumption of coal was not so great as he appeared to imagine, the engine at present working about three to five strokes per minute. He (the Chairman) had distinctly stated at the commencement of the meeting that the committee were still looking out for a suitable steam-engine, but that at present there was not the slightest necessity for it.

The report having been unanimously received and adopted, the accounts were passed and allowed.

The CHAIRMAN said as the operations of the mine had been seriously interfered with by the number of agents constantly inspecting the mine, the committee thought it very desirable that some particular day should be appointed for the purpose of inspection. The SECRETARY said it was perfectly impossible to carry on the operations at the mine with the present system.

Capt. PRYOR fully concurred in the remarks of the Chairman, for the working of the mine was very much prejudiced—the more especially when the sinking of the shaft was being prosecuted—when the workings were incumbered with six or seven inspectors at one time, as in most cases those agents were not the very largest shareholders. He would also suggest that no inspector should be allowed to go underground without an order from the secretary.

A resolution confining the inspection of the mine to one day in the week, and deciding that no agent should be allowed underground unless provided with an order from the secretary, was then put and carried unanimously. It was also resolved that the agent be requested to report upon the mine but once a week, and that the agent should telegraph in the interim any alteration in the mine.

Mr. LELAND said that he had had the mine inspected by an independent and reliable agent, and his report stated that a finer lode he had never seen, and believed it to be the same as that now in dispute at West Basset and South Francis. After reading that report, he felt convinced shareholders would think twice before they sold their shares. He recommended those in the room to purchase a few shares instead of "bearing" them; for in taking an opposite course he feared they would be subjected to a recurrence of the evil effects of playing with edged tools.

The SECRETARY then read an application for the restoration of forfeited shares, which application it was resolved could not be entertained.

Mr. POWELL suggested that the forfeited shares should be charitably distributed among the "bears."

A call of 2s. per share having been made, the committee of management were re-elected, appointing Capt. F. Pryor in the room of Mr. James, resigned.

A vote of thanks to the Chairman was then passed, when the proceedings terminated.

GREAT WHEAL ALFRED MINING COMPANY.

An ordinary general meeting of proprietors was held at the London Tavern, Bishopgate-street, on Friday, Dr. A. BEATTIE in the chair.

Mr. D. COHEN (the secretary) read the notice convening the meeting, and the minutes of the last were read and confirmed. The accounts showed a balance of liabilities over assets of 2668l. 10s. 3d.

The report of the committee was read, as follows:—

It will be remembered that at the last meeting the committee thought it very probable that the returns in the then ensuing quarter would be sufficient to meet the costs; a reference, however, to the accounts will show that the sales of ore leave a deficiency of 588l. 4s. 2d. which is explained in the following manner:—In the past quarter, especially in the earlier parts of it, very great and unusual quantities of rain fell, so much so that many of the mines in Cornwall suffered most severely from it: in many the workings were partially suspended; in some entirely, being nearly filled by the great influx of water beyond the power of the machinery to take it away: in all there was great inconvenience and extra expense. In this mine, where the pitwork, pumping machinery, &c., are so heavy, the extra quantities of water caused a considerable increase in the consumption of coal and other materials connected with the pumping-engine, say to the amount of 2000l. an extra outlay for the iron main rods at Field's shaft being necessary, as one of those rods showed symptoms of failure; this cost 72l., and new main rods 34l.—together, say about 300l. The great and rapid decline in the price of tin caused a deficiency of fully 150l. on the sales of tinstuff, so that there has thus been a loss of 450l. caused by outlay and circumstances beyond control. There is now considerably over 200l. worth of tinstuff broken on the mine and paid for in the present quarter's accounts. As there was reason to expect an advance in the price of tin it was judged prudent to delay the sale of this, and the committee are glad to say that the step taken has proved quite correct, as there has been an advance in the last day of 3d. 6s. per ton on black tin or tin ore, which is likely to increase. There being a considerable quantity of old iron and useless stores on the mine, it was thought right to dispose of some, which has realised 34l., and which appears appended to the account this day. It is hoped that the shareholders will consider this statement satisfactory. For the ensuing quarter it is estimated that from 800 to 900 tons of copper ore will be raised, and an average quantity of tin. The working expenses, it is hoped, will be much less in the summer months. There is good reason to think that the mine will pay costs next quarter; nevertheless, the committee recommend a call this day of 3s. per share. The prospects of the mine, it will be seen from the agents' report, continue good. There is a rich course of copper ore now in the winze below the 210 level, and which the 220 has not yet reached. The drawing power is still less than is required, hence some difficulty in keeping the mine clear of stuff. It is not wise, however, materially to diminish the number of men, considering the amount of fixed charges. The committee wish to defer still further the question of any increased winding power. All the machinery, pitwork, &c., is in excellent working order. A new coupling to the iron rods at Field's engine-shaft has recently been put in, and another ordered to be kept in reserve.

The report of the agents (Capt. W. Bugelholme, W. Arthur, and J. Delbridge) stated that the reserves were fully equal in value to what they were at the last general meeting—15,500l. Their principal and most important points of operation were the 220 level, the 210, and the 160 cross-cut shaft. Those levels they would drive with all the best dispatch. They calculated to raise in the coming quarter from 800 to 900 tons of average quality ore.

The CHAIRMAN, in moving the adoption of the reports and accounts, thought, upon the whole, those documents must be considered satisfactory. During the last quarter the committee had paid four months' bills, and the present balance against the mine was 2668l. The deficiency in the quarter's workings amounted to 588l., but 358l. had been realised by the sale of old stores, which reduced the loss upon the quarter's working to 230l. By the report just read, it had been seen that there was tin to the value of about 200 l. lying at the bank, the cost of raising which had been paid, and included in the account just submitted. The value of that tin, therefore, would more than cover the loss which had been incurred during the past quarter. As he had before said, the merchants' bills for four months had been paid, and the committee considered that a call of 3s. per share would suffice for present circumstances, inasmuch as it would reduce the debit balance about 1900l.

Mr. JAMES HOLLOW (one of the committee), in answer to questions, stated that they would have to drive in the 220 about 7 or 8 fathoms to get under the rich course of ore now valued at 68l. per fathom in the winze below the 210. That was of the greatest importance, for if that course continued to the 220, and also in the 220, a large and valuable piece of ore ground would be laid open, which would enable them to augment the quantity and quality of the ore sales. He recommended, and in that recommendation he was supported by the committee, that until the point to which he had above adverted had been proved, the expense of providing the mine with additional drawing machinery should not be entertained. Although he knew that their winding machinery was totally inadequate to their requirements, yet he considered it most advisable to do as best they could for the present.

Mr. CORN said that it appeared to him that to clear off the whole of their liabilities a call of 12s. per share would be required.

Mr. HOLLOW begged leave to refer from Mr. Cope, as his remarks would imply that they had lost upon the ore 1000l. or 4s. per share, while a reference to the accounts showed that the actual deficiency was only 588l. Had the committee not acted so wisely as they had done, but had sold the tinstuff now broken on the mine—which would have made their credit about 250l. better—the actual loss would have been reduced to 330l. That the committee had acted with a correct judgment in deferring the sale of the tinstuff, was proved by the fact that within the past few days an advance in the price of tin had taken place, and another was expected.

Mr. CORN said that it was owing to the opinion and position of Mr. Hollow that he (Mr. Cope) had continued to hold his shares. Although he did not know Mr. Hollow personally, yet he perceived that he was a thorough business man and a gentleman, and in him he had the greatest confidence.

The reports having been received and adopted, the accounts were passed and allowed. A call of 3s. per share was made.

Dr. A. Beattie, Messrs. James Hollow, W. S. Orr, and W. Nicholson having been appointed the committee of management, a vote of thanks to the Chairman was passed, when the proceedings terminated.

PENHALLS MINING COMPANY.

An ordinary general meeting of proprietors was held at the company's offices, Austin-friars, on Tuesday, Mr. LANGLEY in the chair.

Mr. EDWARD KING (the secretary) read the notice convening the meeting, and the minutes of the last were read and confirmed. The accounts showed:—

Balance last audit	£262 18 7
December sale of tin	310 4 4
January ditto	403 17 9
February ditto	391 3 4=£1367 18 9
December mine cost, merchants' bills, &c.	£279 14 5
January ditto	452 6 9
February ditto	463 14 6
Salaries, printing, sundries, &c.	29 5 0= 1325 0 8
Leaving credit balance	£ 42 18 1

Upon the three months' working there was a loss of 219l. 15s. 6d.

The report of the agent was read, as follows:—
April 20.—Penhalls Lode: The lode in the engine-shaft, sinking below the 30, is 2 ft. wide, composed principally of spar, with a little muddle; these being its principal characteristics since it came in contact with the gossan, about 8 fathoms above the present bottom, or 3 fms. below the 20, where we think, as we have before stated, they lost the leading part of the lode, and which we believe is still standing to the north of the 30. The cross-cut is driven north at the 30 about 9 ft.; in it we have still a branch dipping in that direction, producing good stones of tin, and which we have no doubt will fall into the lode. The driving of this cross-cut we shall push on with all possible speed, as we deem it a highly important point, as stated in our last report. The lode in the 20, east of this shaft, is 3 ft. wide, producing stamping work for tin, with a promising appearance. The 20 has been driven west about 47 fms., and has opened up a large quantity of tin ground; about 10 fms. behind the present end the lode split into two parts; the level has since been driven on the south one, meeting with occasional branches, yielding rich stones of tin, and as all of them have a dipping tendency towards the north, we are led to infer that the main part of the lode is still standing north of the present end, hence we have set a cross-cut to drive north of this end, which is driven about 6 ft., and has just passed through a rich leader of tin, dipping also north about 2½ ft. in a fm.; this, the discovery of this shows clearly that the main part of the lode is still standing north of the old level, and the 160 cross-cut shaft. Since our commencing operations on this lode, we have driven 2 fathoms west of the cross-course, where the lode is 2½ ft. wide, composed principally of spar and muddle; in driving the last 2 feet we have met with a large vein, letting out a great quantity of water, and judging from its present appearance

we are inclined to think good results will be met with in this lode, as it gets out of the influence of the cross-course. The water is drained, and the western flat-rod shaft cleared about 2 fms. below where the 20 ought to be, but no level has as yet been seen to the east of this shaft, and nearly all the ground taken away by the former workers. This shaft is very small, and ought to be at once dialed conjointly with the engine-shaft, to ascertain the best mode for its future development, as it now becomes a question whether this shaft ought to be cut down and made longer, or clear up the engine-shaft that formerly contained the pitwork below the adit level, and to rise, sink, and make the same complete from this place to the surface (about 30 fathoms). In conclusion, allow us to remark that looking at the important points we have to come off shortly in cutting the lode in the different levels to which we have before referred, together with the chances of success at and about the western shaft, we think that when fully developed it will open up a valuable and lasting property.—E. PRYOR, A. GAIR, J. GIBBELL.

The CHAIRMAN having moved the adoption of the report and accounts, hoped that the report would be considered by the shareholders as it was by the committee—highly satisfactory.

The SECRETARY considered that the report just read was most important, not only as it regarded the present position of the property, but also as to their future prospects. Shareholders must recollect that after the mine was drained, and within three months they met with a course of tin worth 80l. per fm., and from the 10 to the 20 fm. level this fine course of tin continued. At that point a copper lode, or what was called in the neighbourhood a gossan lode, cut out the tin lode. From the 20 to the 30 the lode had been poor, and likewise in the bottom levels. The present manager, upon taking charge of the mine, after having carefully inspected the property, came to the conclusion that the late agent had not been developing the mine, and felt assured that it must have been thrown to the north. A cross-cut was consequently put out in the 10, where a most kindly lode had been cut, worth 10l. per fm., and as cross-cuts were going out from the 20 and the 30 rich leaders of tin were constantly being met with, all dipping north, and he had no doubt that the large course of tin, before alluded to, would be found in a fathom or two more driving. It would, perhaps, be interesting to the shareholders at the present meeting to know that at the quarter's statement of accounts, submitted July, 1859, the first quarter's tin was credited, amounting to 712l. 17s. 9d.; since which, for the 18 months, the mine had returned, with 12 hoisting the mine, and, as far as the tin was concerned, the mine, being provided with stamps, dressing-floors, and a powerful steam-engine, was in an efficient working condition. It was true that the last quarter's operations had taken from their profits about 200l., but that had arisen from the drop in the price of tin of something like 12l. per ton. As regarded the western mine, that was being unwielded, and brought into a working condition, the water having been drained, and the shaft cleared 3 fms. below the 20. The agents found that above that level the whole of the ground had been taken away by the old workers. As to when the mine was last in operation no positive record could be obtained, but from the wooden-pumps, and some other crude implements of mining that were occasionally found, they calculated it must have been over 100 years. He considered that, seeing the number of lodes running parallel, only 20 or 30 fathoms apart, the mine would soon become the most profitable in the parish of St. Agnes.

The CHAIRMAN found, upon reading the report, that the agent recommended the flat-rod shaft to be at once dialed conjointly with the engine-shaft, to ascertain the best plan for its future development, as it now became a question whether that shaft ought to be cut down and made larger, or whether the engine-shaft that formerly contained pitwork below the adit level should be cleared up. He (the Chairman) should, therefore, recommend that a shaft should be prepared, and the shaft and underground workings accurately dialed; and to carry out that necessary work they could not do better than appoint Mr. J. Henderson, who, as the shareholders knew, was the dialler of Wheal Kitty.

Mr. R. DAVEY, M.P., agreed with the remarks made by the Chairman, for from what he had heard when upon the mine he felt confident that they had lost the main lode, and that it would be found to have been heaved north by the gossan. He considered their superintending manager, Captain Richard Pryor, a good and careful miner, and one well adapted to bring that mine to a successful issue.

The CHAIRMAN stated that since the last meeting, the committee having been empowered to make such arrangements as might be deemed necessary, at the recommendation of several influential county gentlemen, had decided upon appointing Mr. R. Pryor, Mr. ODDELL quite agreed with the concluding paragraph of the report, that there were very important points to come off shortly, and that the intersection of the lodes at the different levels in the cross-cut north presented indications that a rich and valuable mine would soon be opened. The last call was made in Jan., 1860, and from the mine having been self-supporting for the last 15 months, besides having paid all costs of unwinding the western mine, he considered that they had before them a prosperous future.

A SHAREHOLDER looked forward to the draining of the western part of the mine with a great deal of anxiety. Reports were received from the neighbourhood that a fine course of tin existed at the bottom of the mine, which was supposed to be between the 30 and 40 fm. level. The suspension of operations, he stated, had arisen from the junction of the lodes having caused such an enormous stream of water that the then means at the command of the shareholders had proved inefficient.

The report having been received and adopted, the accounts were passed and allowed. Resolutions were then passed confirming the appointment of Capt. R. Pryor, as superintending manager, and authorising Mr. Henderson to forthwith dial the western mine. A special vote of thanks having been passed to Mr. Edward King for his zeal and attention to the company's affairs,

A vote of thanks to the Chairman was passed, when the proceedings terminated.

LADY BERTHA MINING COMPANY.

An ordinary general meeting of proprietors was held at the company's offices, St. Helen's-place, on Thursday, Mr. PETER WATSON in the chair.

Mr. G. LAYINGTON (the secretary) read the notice convening the meeting, and the minutes of the last were read and confirmed. The accounts showed:—

Balance last audit	£ 184 8 11
Ore sold	1425 17 9
Received for carriage	33 16 7=£1642 3 3
Mine cost, Dec., Jan., and Feb.	£1211 4 11
Committee	7 17 6
Discharge, &c.	10 3 11
Merchants' bills paid	328 1 2= 1557 7 6
Leaving credit balance	£ 84 15 9
The balance of liabilities over assets was 1039l. 4s. 1d.	

The report of the agents was read, as follows:—
April 20.—In presenting you with our report for the last meeting of shareholders, we would beg to state for their information that the best extended shaft of the cross-cut 13 fathoms; we have not cut into the lode here lately, being anxious to reach the cross-course as soon as we possibly can, and which is yet several fathoms ahead of the present end. The ground is now more easy for driving than it was some fathoms behind us, carrying muddle, spar, &c. In the same level west we have driven 7 fathoms through a very hard lode indeed, which has very much retarded our progress; in the end the lode is over 5 feet wide, composed of quartz, peach, muddle, and spots of ore. The 41, west of shaft, has been suspended for some time past, being driven near to the bottom of the lode, which is now down about 5 fathoms, the lode is large, and has a very promising appearance, composed of peach, muddle, and ore; this winze will connect us just on the 30 end. In the tribute department we have seven pitches working, at an average of 10s. in 12, which are producing a moderate supply of ore—one in particular we may mention, in the bottom of the 20 west, is now worth 20l. per fathom. We have employed in and throughout the mine about 100 persons. We are prepared with our sampling on Friday next, computed about 230 tons, and we can see no reason why our returns for the next four months should be short of the last—455 tons; whilst economy shall be observed in every department consistent with the effectual development of the mine, in conclusion, it affords us satisfaction to say the mine is looking more encouraging than we have seen it for some time since.—F. C. HARPUR, J. MITCHELL.

The SECRETARY stated that the result of the past quarter's working was a loss of between 40l. and 50l. During the three months the two sales of ore had realised 1425l., while the costs had been 1460l. The meeting had been called about one month before the usual time, in consequence of the committee being somewhat pressed by the merchants; consequently the accounts just presented showed one month's costs in excess of the returns.

The CHAIRMAN, in answer to a question as to whether any muddle had been sold, said that Capt. Harpur had stated that he was in treaty to sell another parcel.

The SECRETARY said that at the next meeting the accounts would show four months' returns against three months' cost; the returns would, it was estimated, realise between 1800l. and 1900l., against 1200l. costs.

The CHAIRMAN stated that the mine had considerably improved since last meeting. There was one point referred to in the report which was of the greatest importance—the 30 fm. level, which was coming under the point where the rich bunch of ore had been met with in the level above, and which had caused such an extraordinary rise in their shares some twelve months since. They had been looking forward for a long time to the attainment of that point, and he was glad to say that during the past week such a gradual improvement had taken place that the agents began to feel confident that they were approaching the same bunch of ore that was so very valuable in the level above.

For his own part, he was strongly of opinion that they would have a very rich course of ore going eastward, especially as they approached the great cross-course. In the 41 west they had for a number of fathoms driven through a splendid lode, and where, since last meeting, a large amount of reserves had been opened out. As to the 53, which although a point of equal importance, they did not expect to achieve any important result until they had gone to the other side of the cross-course, when they expected to meet with the same shoot of ore as had already been explored in the upper levels. Upon the whole, he considered, and he thought the shareholders would agree with him, the mine was looking very much better than at the last meeting. One important fact that he might mention was that the residents in the locality were sending up orders to buy shares.

The SECRETARY said that the depressed standard was much against them, for their ore not being rich a low standard operated very adversely upon their sales.

Mr. POWELL said it was an important fact that the ore improved as they progressed eastward. There could be no doubt that their ground eastward would prove to be very valuable, if from no other fact

PROVIDENCE, W. Hollow, jun., April 24: Higgs's Shaft: No. 3 carbons is worth \$5.50 per fm. No. 4 carbons is worth 26¢ per fm. The lode in the stopes in bottom of the 75 east is worth 10¢ per fm.—New South Lode: In the 55 east the lode is am producing a small quantity of tin, with a kindly appearance. No. 1 stope, in the bottom of the 55 east, is worth 10¢ per fm. The lode in the 55 west is a very small one. Below this level the lode is worth 15¢ per fm.—Dunstan's Shaft: The lode in the 44 is disordered by a cross-branch. In the 35 the lode is worth 67¢ per fm. In the 24 the lode is worth 8¢ per fm.—Little Whael Speed: The lode in the 35 west, on the south lode, is worth 6¢ per fm.; in this level east, on the south lode, the lode is worth 89¢ per fm. The lode in the 35 west, on the north lode, is worth 10¢ per fm. The lode in the 35 west, on the north lode, is worth 10¢ per fm. The lode in the 35 west, on the north lode, is worth 10¢ per fm. Whidden deep adit as fast as possible. The following is an abstract of our settlings Friday last:—80 men on tribute at an average of \$8. in 1¢., and 60 men on titwork.

REDMOOR.—T. Taylor, April 22: During the past month we have driven the 40 west, on Johnson's lode, 3 fms. 5 ft. 4 in.; the lode in this end is small and poor; our object is to push on to see the lode, west of the cross-course, as far as possible; set to four men, at 6 ft. per fm. In the 50 west, Johnson's, we have cut the cross-course sooner than expected, having struck the lode nearly perpendicular; the lode is here about 10 ft. We are now rising to communicate to the 70, which we hope to do by next setting-day; this will ventilate the mine, and give us a good place of ground in the back of the 80 for stopes on tribute. We shall also be in a position to resume the driving of the 70 west, in which the lode is worth about 9 ft. per fm. I may add we have had a hole or two in the lode, west of the cross-course, which looks favourable; we have 22 men on tribute, averaging about 11s. in 11 ft. for tin. We are getting on with the dressing as fast as possible.

RHEIDOL.—Capt. Ridge, April 20: In the river adit level the end has been driven a short distance during the past week, but the lode not being so good as last reported, we have thought it advisable to stop along the bottom of the level to prove the lode in depth. We have proved the ground 2 fms. long, and from 3 to 4 feet in depth; the lode at this point is 15 in. wide, yielding upwards of 1 ton of lead per fathom; the lode is bearing away westward, and from the depth of the lode already explored it is every thing that can be desired for a still further improvement. The water being too much for us to stop with, we think it quite advisable to commence at once and extend the driving of the 12 fm. level cross-cut in bottom of the engine-shaft, which no doubt will intersect the lode at right angles. Nautica's deep adit level still holds out very promising appearances for lead.

RHYSCOG.—A. Marsden, April 24: In the cross-cut south the miners have, as I anticipated, cut a very fine lode, east and west, 3 ft. wide, with copper and lead, but not of value. The south-west lode, that Mr. Mitchell saw, will make a junction with the above in about 5 or 6 fms. I shall move the miners in the beginning of the month to drive on this towards the junction, which I expect will make good ore.

RIVER TAMAR.—J. Cock, April 22: The ground in the cross-cut is strongly mineralised with copper, and it is highly probable that there is a lode not far beyond our present workings. I would, therefore, recommend to continue the driving of this cross-cut with all possible speed. No doubt it will one day or other be put right across the vein, and I fully believe that steady progress here will result in opening up a profitable mine. I think it would be advisable to drive a fathom or two on the branch lately cut in the cross-cut; it is worth a short trial.

ROSEWATNE UNITED.—E. Carthew, April 23: In the 90 west the lode is 2½ ft. wide, producing a little ore. In the 90, east of Jennings's shaft, the lode is 2 feet wide, yielding ¼ ton per fathom of good ore. In the 88 and 84 west there is no change since last week. In the 46, east of Lane's shaft, the lode is 2½ ft. wide, with a promising appearance. In the 34, east of Lane's shaft, the lode is 2 feet wide, containing stones of ore. In the 22, east of Lane's shaft, the lode is 2 feet wide, yielding good stones of ore. The tribute pitches generally continue to look well.

SIGFORD CONSOLS.—W. Hoaking, April 22: I am glad to report a considerable improvement in the north copper lode both in size and character; the lode is now from 2½ to 3 feet wide, yielding good stones of copper, and ground very congenial for further improvement; we are pushing on the work here as fast as possible. In the engine-shaft the ground is superior for sinking; I cannot report further as to the value of the lode here, as I shall not take down any more of it until a cross-cut is put through it in the next level, but the country has a very promising appearance.

SILVER VEIN.—F. Squire, April 25: The works, with the exception of Wednesday, in consequence of a slight accident to the furnace, have gone on daily with the same visible and successful results. The mine remains in the same satisfactory condition for obtaining a large supply of ore as last reported. On Friday and Saturday a considerable quantity of ore will be raised. I am now placing down the zinc flooring for dressing the prepared ore previously to grinding for sampling. I shall personally neglect nothing which I may consider conducive to the true interests of the company. I am happy to say, looking over the treated ore, I cannot fail in having some very high results of silver. I feel confident, during the year, I shall produce tons of ore worth from 500l. to 1000l. per ton, perhaps more. I have nothing whatever to do with opinions now so freely expressed; I can only say the objects for which the company was established are being legitimately carried out, and up to this time attended with success; and such is the general opinion of those in Cornwall who have inspected the ores, before and after treatment, at the works. I shall give no results from private assays; I am determined, if possible, to avoid all error, by giving the analyses of the yield of silver from a very large quantity of finely-crushed ore. The company, as long as I represent it in Cornwall, shall stand alone on its fair commercial merits, of the result of which I have no personal apprehension, and am myself indifferent either to praise or censure.

SORTRIDGE CONSOLS.—R. Jackson, April 23: In the 110 east the lode is 2 feet wide, yielding stones of ore. In the 83, driving west of Crew's cross-cut, the lode is 2 ft. wide, yielding good stones of ore. In Head's rise, in back of the 50, west of Crew's cross-cut, no lode has been taken down this last week. In the 50, driving east on No. 2 south lode, the lode is 1 ft. yielding stones of ore. In the 50, driving east on No. 2 south lode, the lode is small and unproductive. In the 40, driving east on No. 2 south lode, the lode is small and unproductive. In Blanchard's stope, in bottom of the 40, on No. 2 south lode, the lode is worth 1 ton of ore per fm. In Rowe's stope, in back of the 40, on No. 2 south lode, the lode is worth 2 tons of ore per fm. In the 30, driving east on No. 2 south lode, the lode is worth 1½ ft. per fm. No change to notice in any other part of the mine.

SOUTH CARADON WHEEL HOOPER.—W. C. Cock, April 20: In the engine-shaft we have a floor of spar apparently of great thickness, and I hope to see a favourable change in the lode under it. The lode in the 62 east and west is spotted with copper ore, but continues small. In the 62 cross-cut the cross-course is about the same size as when I wrote last, but the ground about it is hard.

SOUTH CONDURROW.—J. Vivian, N. Thomas, April 24: The engine-shaft is now completed to the 30, and the same set to sink to the 40, by six men and three boys, at 14 ft. per fm.; the lode is 4½ ft. wide, composed of gossan, spar, and mundle, impregnated with copper ore, and kindly in appearance. In the 15 east it is 3 ft. wide, kindly, and producing a small quantity of copper ore; set to two men and two boys, at 3 ft. per fm. In the adit west it is 3½ ft. wide, composed principally of peach, containing a small quantity of tin; set to four men and two boys, at 5 ft. per fm. In driving the same level east from Thomas's shaft, to meet it, it is 2 ft. wide, at present unproductive; set to three men and three boys, at 3 ft. per fm. In the same level, west of cross-cut, it is 2½ ft. wide, a very kindly lode, and producing rich stones of copper ore.

SOUTH CRENVER.—E. Chegwain, April 23: In the 105 east no lode has been taken down for the week, but when taken last produced 1½ ton of good copper ore per fathom; we are now taking down the lode the end of the week. The tribute pitches in bottom of the 105 are looking well; we find the ore is lengthening as we go down, and in looking at the ore gone down in bottom of the 105 west, and the ore now cut in the 105 east if the shaft were sunk 20 fms., and levels driven east and west, it is my opinion that the mine would pay costs, and leave good profits to the adventurers. We purpose sampling this day 61 tons of copper ore.—South Mine: In the 51 cross-cut, south of new shaft, the ground is favourable, and a large stream of water flowing from the cross-cut.

SOUTH DEVON IRON AND GENERAL MINING COMPANY.—
ATLAS TIN MINE.—Captain J. Warren, under date of April 25, writes: "I have been underground to-day, and find the lode in the western end still improving in size and quality; it is 4 feet wide, and I value it at 35 ft. per fm. Judging from the character of the lode, as now seen, we are on the point of that shoot of tin going down in the bottom of the 10, and should it continue for 2 fathoms, White's shaft will go down into it. The burning-house will be completed and ready for burning the tin in about three weeks. There are about 6 tons of raw tin reduced, and about 4½ tons of it prepared for the burning-house. The stuff now being raised from the western end is, as you will learn from what I have already said about it, paying work. There are four hands at work during the day of 10 hours, which stamp out about 1 ton of st. per day, but as we have now a picking table, &c., erected, we greatly reduce the pile as it comes from the lode, and I improve the quality of the work."

SOUTH LADY BERTHA.—R. Unsworth, April 25: The stopes in the 40, east of Leman's rise, is worth 2½ tons per fm. The stope in the 40 west are worth 2 tons per fm. The lode in the end of the 40 fm. level is being taken down, and I will give the value next week.

SOUTH TRESAVERN.—S. Whitburn, April 25: Since last reported the lode in the engine-shaft has very materially changed; it is now 4 ft. wide, yielding some splendid mundle, with pyrite and gossan, interspersed with spots of yellow copper ore. The stratum is changed to a lighter coloured killas, and the lode taking a better inclination; its underlie is about 1½ ft. in the fathom.

SOUTH WHEEL TOLGUS.—April 24: Youren's Lode: Mitchell's summen have commenced cutting tip-plate in the 130. In the 130, west of Mitchell's shaft, the lode is 15 in. wide, composed of peach, jack, and mundle. The ground in the 130, east from Mitchell's shaft, driving towards the south lode, is rather hard. The lode in the 120 west is 1 ft. big, yielding 1 ton of ore per fm. In the 110 west the lode is small and unproductive. The lode in the 100 west is 2 ft. wide, consisting of peach, spar, mundle, and good stones of ore—a very promising lode. The lode in the winze sinking in bottom of the 100 west is not so large as when last reported, now about 10 in. big, producing 1 ton of ore per fathom. The lode in the 90 west is 10 in. big, producing 1 ton of ore per fm. The stope in back of the 120 west is producing 2½ tons of ore per fathom. In the 78 west the lode is 20 in. wide, composed of peach, spar, and mundle—a very kindly lode. The lode in the 66 west is 15 in. wide, consisting chiefly of quartz.—South Lode: In the 120 east the lode is 3 ft. wide, composed of spar, peach, and mundle, and is letting out a quantity of water. In the 110 east the lode is 2½ ft. wide—unproductive. We have holed the winze from the 100 east to the 110, which has given good ventilation in this part. The two stopes in back of the 110 east are each yielding about 2½ tons of ore per fathom. The lode in the 100 east is 20 in. wide, composed of peach and mundle—unproductive. The lode in the winze sinking in bottom of the 90 east is 2 ft. wide, consisting of soft spar and killas. The lode in the winze sinking in bottom of the 78 west, on Youren's lode, is 20 in. wide, composed of peach, spar, and good stones of ore—a very kindly lode. In the 78 west, on the new south lode, the lode is 20 inches wide, and consists of spar, peach, and mundle.

ST. IVES WHEEL ALLEN.—J. Pearce, H. Taylor, April 25: Gleiser's Flat-rod Shaft: The 30, east and west, looks much the same as last week. The lode in the 40 west is 15 inches wide, with a promising appearance. The lode in the 30 east is 15 in. wide, and worth 18 ft. per fm. In the 40, east of Lonsdale's shaft, on Roderick's lode, there is no change to notice since last week. The bottom of the 30, west of Lonsdale's shaft, is being stopped as fast as possible, and we expect soon to complete it. We calculate to hole the 50, west of sump-winze, to the 50, east of Gleiser's shaft, in about one week more. The lode in Roderick's engine-shaft, sinking below the 10, is 7 inches wide, and worth 5 ft. per fm. The lode in the 20, east of Highburrow shaft, is 15 in. wide, yielding tinstuff, but not enough to value. Nothing yet to notice in the deep adit, north of Highburrow, on the cross-course. The miners are progressing rapidly in building the steam-whim and stamps-house. Nothing else new.

TAMAR SILVER-LEAD.—F. Foot, April 24: There is nothing new in the 237 south since my last report. In the 236 south we have not cut through the lode, but hope to do so by the end of the present week; the two stopes in back of this level will yield 20 and 8 cwt. of lead per fm. We have taken down the lode in the 215 south, which is looking well, and has produced 20 cwt. of lead per fm., but in the end the lode is not looking so well; the stope in back of this level, four in number, are producing as follows:—No. 1, 16 cwt.; No. 2, 9 cwt.; No. 3, 7 cwt.; and No. 4, 14 cwt. of lead per fathom. The lode in the 208 south still continues poor; the stope in back of this level, four in number, will yield on an average 4 cwt. each of lead per fm.

TEES SIDE.—R. Bray, April 24: The Sun vein in Providence engine-shaft is from 2 to 3 ft. wide, of spar, jack, and a slight mixture of ore—a very kindly. The north lode is making a turn in the shaft again; there is no doubt but when the two lodes do meet, and make a junction with each other, we shall have a bunch of ore as it comes in, when we commence sinking the shaft under the 24.

TOLCARNE.—April 24: Field's Lode: The lode at Field's adit below the 20, is 2½ ft. wide, worth about ½ ton of ore per fm.—a very kindly lode. The lode in the rise in back of the 20, east of shaft, the lode is 10 inches wide, unproductive. In the 20, west of shaft, the lode is 20 inches wide, composed of gossan, soft spar, and good stones of ore, a very promising lode.—The lode in the winze below the 10, east of shaft, is 2 feet wide, composed of spar and gossan—a promising lode. In the winze below adit, east of Field's shaft, the lode is split into branches—unproductive.—Kathoven's Lode: The

lode in the adit level west is 4½ ft. wide, and its value 50 ft. per fm. for tin. In the slope in back of the adit the lode is 2½ ft. wide, and worth 25 ft. per fm. for tin.—King's Lode: The lode in the rise in back of the adit is 1 foot wide, and is producing a little black ore, kindly in appearance. King's shaft is being sunk from the surface by six men, at 25 ft. per fathom.

TOLVADEN.—F. Gundry, J. Gundry, April 24: The engine-shaft is sunk 7 fms. below the 60; the present price is 33 ft. per fm. for sinking. The 60 is driven east from the engine-shaft 15 fathoms; the lode is large, and yielding good stones of yellow ore; some portions of this driving have yielded as much as 2½ tons per fm. The 60, west of the engine-shaft, is driven 22 fms.; the first 13 fms. of this driving was on the flokan course. At this point we cross-cut the lode, which was 10 ft. wide, and found a leader of grey ore on the north part of the lode 9 in. wide; 5 fathoms further on we cross-cut again, and found the ore to be of much the same character; 4 fms. further we cross-cut again, and find that the lode is so changed at this point, which is 7 ft. in the lode, that we can better cross-cut it here for 5 ft. per fm. than we could at the former cross-cut for 15 ft. per fm. We consider from present appearances that we have discovered in this level the top of a fresh deposit of ore, which we have seen about 7 fms. in length, which is under 25 fms. of dead ground. The 50 is driven east of the engine-shaft 48 fms.; for the last 12 fms. the lode has not been taken down, but at the present end we have cross-cut the lode to the extent of 5 ft.; here we have discovered ore, but cannot say to what extent, as we only cut it during the past night. We have a winze sinking from the 40 just over this end, which is yielding 2 tons of yellow ore to a fathom, which gives us to suppose that the lode will be productive of ore in this level. Our stopes and pitches are much the same as for some time past: 22 fms. east of Wheel Down shaft, at the adit level, we have driven a cross-cut north 3 fms., and discovered a branch of yellow ore, yielding at present 2 tons to a fathom.

TREBUCK UNITED.—James Pope, April 20: The engine-shaft is cut down and secured 25 fathoms below the level of the water drained to the 40, which we hope to complete by the end of the present month. The wood shaft is complete about 1 fm. below the 16; ground easy for sinking, which we think it will be to the 26, by the end of the present month, when we expect to open some good tribute ground. In the 36, west of wheel-shaft, the lode is about 6 inches wide, opening good tribute ground. The wheel-shaft, sinking below the 36, is down about 4½ fms., and ground easy for sinking, which will take about three weeks to reach the 36, when we shall set some more pitches at once. In the 16 cross-cut south the ground is very easy for driving; here we expect to cut the counter lode by the end of the present month, which, from reports, is expected to be the top of the end; it is, however, a very pretty lode, and opening up good ore. Another at 10s. in 11 ft., the men getting good wages. From what can be seen of the mine I consider it a very promising concern, and I have no doubt as soon as we have cleared the different levels and put the mine in a proper state of working good returns will be made.

TRELOWETH.—T. Richards, April 19: The lode in the engine-shaft, sinking below the 134, is worth 15 ft. per fm. The 134 east is yielding a little copper ore. The 134 west contains a little copper ore, and the lode looks promising for an improvement. The 124 east is worth 25 ft. per fm. The 124 west is worth 7 ft. per fathom. The winze sinking below the 124 west is worth 20 ft. per fathom. The winze sinking below the 124 east is worth 30 ft. per fm. The stope in back of the 134 east is worth 14 ft. per fm. The stope in back of the 134 west is worth 12 ft. per fm. The stope in bottom of the 116 east is worth 20 ft. per fm. We have not yet intersected the lode at the 80, west of Woodfall's, in the cross-cut, driving north of the great cross-course.

TRENCROM.—R. Hollow, Francis Bennetts, April 24: Gleiser's engine-shaft is sunk below the 90 2½ fms.; the lode produces stamping work; set to sink, by six men, at 13 ft. per fm. In the 90, east of the engine-shaft, the lode is worth 2 ft. per fm.; set to drive, by four men, at 3 ft. per fm. In the 80, east of the engine-shaft, the lode is worth 3 ft. per fm.; set to drive, by four men, at 3 ft. per fm. In the 80, west of the engine-shaft, the lode is of a promising character; set to drive, by two men, at 2 ft. 15s. per fm. In the 60 cross-cut, south-east of the engine-shaft, we have about 12 fms. to reach the end; set to clear, by two men, at 5s. per fm. In the 40, east of the engine-shaft, the lode is worth 3 ft. per fm.; set to drive, by two men, at 3 ft. 5s. per fm. In the 30, east of the engine-shaft, the lode is worth 12 ft. 10s. per fathom; set to drive, by four men, at 3 ft. per fm. In the 20, east of Mitchell's flat-rod shaft, the lode is worth 3 ft. per fm.; set to drive, by four men, at 2 ft. 5s. per fm. In the 20, west of Mitchell's flat-rod shaft, the lode is not to value at present; we expect an improvement in this end as we get under the tin ground in the 10; set to drive, by two men, at 11 ft. 15s. per fm.

TRUMPET UNITED.—G. R. Odgers, April 20: We have driven the 15, east of the shaft, 8 ft.; lode 6 in. wide, from which we have broken some very good tin. The lode in the 15 west is 10 in. wide, yielding good tinny work, worth 4 ft. per fm. We have fixed the two bobs, and next week we think we shall fix the flat-rod.

UNITED MINES (TAVISTOCK).—J. Tucker, April 24: The shaft is down for a 60 fm. level; the men are now engaged dividing and casing it, to bring down the whim-kibble; this I hope will also be completed by to-morrow noon. We shall then commence to drive a wide cross-cut, which has to answer for a pit. I hope to cut the lode in a fortnight, or three weeks at most. We have now timbered and secured about 15 fms. of the lobby, but have not as yet succeeded in letting down the water in the wheel-pit low enough to stamp, therefore it will tell upon our next sampling.

VALE OF TOWY.—A. Waters, T. Harvey, April 23: In the present bottom of Clay's engine-shaft the lode (the position of which since we were vertical) is underlying the shaft at an angle of about 30°; and from present appearances we calculate that what we consider to be the main part of the lode will have come out into the line of the shaft by the time we reach the 100; we have cut into the lode some 2 or 3 ft., and find it composed of soft sulphate of barytes, carbonate of lime, and blende, in large quantities, all of which is stained with lead, together with occasional stones of lead ore—a more promising lode no man can see. The ground is of the right kind, and favourable for progress; and we hope to get the lift down the required depth for the next level by the end of the present month. The 30 south looks more kindly, and continues to open tribute ground. All the other places are without change since last reported on. We shall sample March ore on Saturday next.

WENTNOR (PANTAS).—T. Pierce, April 25: We have repaired the bottom of Grosvenor shaft, and shall now prepare to sink same as instructed. The forebore of the 64 yard level is in a very strong vein, and promising ground; I am certain we shall have ore somewhere contiguous to this level, and probably the cross-cut we are now putting out to intersect the parallel lode may give it us.

WEST BASSET.—W. Roberts, April 24: In the 94 west the lode continues 3 ft. wide, producing about 1 ton of good ore per fathom. In the 94 east the lode is 3 ft. wide, worth 3 tons per fm. The rise in back of the 65 produces 1 ton per fm.; lode 3 ft. wide. In the 50 west the lode is 2 ft. wide, very promising, with stones of good ore.—North Part of South Lode: In the 84 west the lode is 2 ft. wide, producing nearly 2 tons of ore per fathom. We shall sample this morning (computed) 424 tons.

WEST CONDURROW.—G. Bennetts, G. Jewell, April 24: Since our last report we have been engaged in cutting pit in the 12 at the engine-shaft, which we expect to complete in a day or two, after which we shall resume sinking. In cutting the pit we find branches in the lode in the north side of the lode, and at 6 ft. from it, and they are composed of copper, jack, lead, with a little tin. The appearance of these branches gives a more encouraging appearance to the indications in connexion with the lode in the engine-shaft. The other parts of the mine are without change.

WEST DEVON.—Capt. Rowe, April 25: The water in this mine is being forked rapidly; the engine and other machinery is working well, and I hope by another week to give you a good account of the proceedings. We are forking upon the south shaft.

WEST SHARP TOR.—W. Richards, April 23: The cross-cut is extended into the lode in the 150 about 13 ft., and the part now being cut into is chiefly gossan and quartz, containing a little red oxide of copper and grey copper ore—a promising point. Morris's shaft is now below the 150 between 2 and 3 fms., and the ground continues favourable for progress. The summen are now engaged cutting a tip-plate, which, when completed, will facilitate the sinking.

WEST SNAILBEACH.—J. Richards, April 25: The sinking of the engine-shaft below the 64 is progressing with all possible dispatch. The north lode, driving west at the 64, is hard for progress; there is no alteration in the character of the same since my last. The same lode, driving east, has the same level, has a very good appearance, and is composed of a little of blende and carbonate of lime, with a little lead ore, by driving east on this lode we shall meet with the pipes of ore dipping in that direction. At the 64 fm. level, driving east on the south lode, some spots of ore have this day made their appearance, and the ground is a little more favourable for driving.

WEST WENDRON CONSOLS.—R. Kendall, J. Hore, April 20: We have cut down the engine-shaft to the bottom of the old men's workings, and find the lode is small, but yielding a little tin. We are clearing up an adit shaft, south of the engine-shaft, in order to clear the adit into the south lode, which we shall do as fast as possible. The water-wheel shaft is without change. The lode in the 10 east is about 3 ft. wide—looking kindly.

WEST WHEEL MARGARET.—Capts. Uren and White, April 23: We have no important change worthy of notice during the past week. The lode in Hallett's shaft, sinking below the 20, is much the same as last reported. We are getting on well with the clearing up of the old workings on Wheel Mary lode, and hope to reach the bottom soon.

WEST WHEEL TREVELYAN.—J. D. Osborn, April 20: Cater's engine-shaftmen have completed casing and dividing the shaft to the 55, in order to draw the stuff from that level. In the 48, west of Cater's, on Park lode, the lode is a little disordered, but is still producing good ore on the north part. The stope in back of adit level, west of No. 3 winze, is worth 10s. per fm. The stope in back of adit level, west of No. 2 winze, is worth 10s. per fm. for copper ore 5 ft. per fm., and likely to improve. In No. 1 winze, sinking below the 38, west of Cater's, the ground is spare for sinking, and the lode disordered at present. In the cross-cut driving north from Cater's, in the 28, the ground is more favourable for driving, and issuing more water. In the cross-cut driving south from Park shaft, we have got into a large lode, but poor at present. We hope to sample on April 28 from 35 to 40 tons of good quality.

WHEEL AGAR.—W. Roberts, April 24: There is no alteration in the winze sinking under the 70, as the men are going down by the side of the lode. In the 80 west the lode continues 4 ft. wide, producing good stones of ore, about 1 ton per fm. We sampled yesterday 54 tons of ore; the parcel, computed 14 tons, was broken in the winze and 84 east west.

WHEEL ARTHUR.—T. Carpenter, April 23: Old Lode: We have driven the adit level north by the side of the cross-course 3 fms., but not yet cut the lode; we never saw the lode so far in our south ground before, by the means we cannot say how far it has heaved the lode. I think we are getting very near the lode, as the ground is very much better for exploring, and the water coming from the end very freely. The lode in the rise in the back of adit level west is 4 ft. wide, composed of spar, mundle, and copper ore, worth 1 ton of copper ore per fm. The lode in the 50 east is 3 ft. wide, consisting of spar, mundle, and good stones of black and yellow copper ore, a very promising lode indeed. We have now commenced driving this level in Arthur ground, and have 4 fms. more to drive east before we reach with Wheel Edward boundary cross-course, which will pass through our south ground.—Great South Lode: The lode in the back of adit level west is 15 in. wide, composed of spar, peach, and mundle, intermixed with copper ore. No other change to notice.

WHEEL ANNE.—H. B. Grose, April 24: We have to-day cut a new lode in the deep adit, which is 2 feet wide, and rich for tin; from an average sample of the lode taken it is worth 10 cwt. of tin per 100 cwt., and worth full 20 ft. per fm.; a more promising lode cannot be seen, and will, no doubt, yield large quantities of tin. From what we can see as yet, this lode is the one that the ancients worked upon on the north side of the set for 500 fathoms in length and a great many fathoms in depth. We shall now commence to drive on its course where intersected, which is about 15 fathoms below the surface, and in extending west we shall soon get 30 fathoms below the surface, and be able to get large quantities of tinstuff from this lode alone. We are making good progress in driving the shallow adit, and hope to be home to the lode by the end of next week, when we shall be able to get any quantity of good tinstuff for stamping, the lode being large and productive for tin for its breadth (2 feet). We are pushing on with clearing ground for wheel-pit, stamps' lobby, &c., as fast as possible, in order to get the stope to work as soon as possible to return tin in large quantities, which will be done at once when the stamps are got ready for work. And from the present prospects of the mine, we shall be able to return good profits to the shareholders monthly, for I

can truly say I never saw such prospects of success in a mine before for the outlay required. We are stamping some of the work by a little stamp we have borrowed, and I am happy to say the work is turning out better than I expected.

WHEAL CONCORD.—Capt. Luke, April 25: We are proceeding with forking the mine, and the pumps are in good order. When in the 50 we shall be able to explore what has been done at that depth, and hope to be able to report favourably thereon.

WHEAL CREBOR.—J. Gifford, April 25: Cock's shaft is down to the 60, below the adit. The lode in bottom of the shaft is about 4 ft. wide, composed principally of capel, mundle, and copper ore. The 48 is driving west by six men, at 6 ft. 10s. per fm.; the lode is small. The 48 is driving east by six men, at 3 ft. 10s. per fm.; lode small. We shall sample to-morrow between 30 and 35 tons of copper ore.

WHEAL CUPID.—April 20: We have an improvement in the 40, east of the engine-shaft, where the lode is 2½ ft. wide, and worth 20 ft. per fm. No change to notice in any other part of the mine.

WHEAL DANIEL.—R. Pryor, H. Harvey, April 19: We have completed the cutting of ground in John's shaft, and put in clister and boars for the plunger-lift at the 50, but are now waiting for the sundry castings, which are promised to be forwarded to-morrow. King's shaft is completed 4 fms. under the 30, and under the same this shaft is full of stuff, which we have set four men to clear, timber, and put in footways at 40s. per fathom. Foxe's shaft is cleared and secured to the 50; this level we have set to four men, to clear and timber east and west from the shaft, at 17s. 6d. per fm.; it is also filled with stuff; we may here remark that this will be pushed on with all speed to make preparation for taking out the dam against the north lode, and also the western level in order to get communication to John's shaft at this level. We have cleared Tremayne's shaft from surface to the 30 under the deep adit, and set to four men to timber and make the same complete at 5 ft. per bargain. The machinery of the mine is in first-rate condition and working well.

WHEAL EDWARD.—M. H. East, April 30: South Lode: In the 81 west we are driving by the side of the lode; ground good for progress. In the 71 west the lode is 5 feet wide, composed of capel, spar, mundle, and copper ore, worth 20 ft. per fathom, and is a very fine-looking lode. In the 61 west we are driving by the side of the lode in blue killas, strongly mineralised; this end, although 15 fathoms in advance of the 71, continues quite dry. In the rise in back of the 61 west the indications continue very good; we are carrying this rise about 2 fathoms long, the first 6 feet from the eastern end of the rise is in soft killas and the canter lode, and the remainder on the main lode, which is worth 10 ft. per fathom. In the 61 east and the 50 west there is no change of importance. In the 40 east the lode at present is not so good, owing to a floor of gossan coming down from the back of the end; it is, however, a very pretty lode, and opening up good ore ground.—North Lode: In the boundary cross-cut north the ground is very easy for working; two men have driven 14 ft. since Monday last. In the 52 west there is no change worth reporting. We are making fair progress towards our next sampling, and calculate it will rather exceed the last, if things go on according to present promise.

WHEAL GRENVILLE.—G. R. Odgers, W. Bennett, April 20: There has been no lode taken down in the engine-shaft since our last advice. The lode in the 100 east is 1 ft. wide, producing a little ore, and letting out a quantity of water. The lode in the 100 west is 1 ft. wide, producing some very good ore; here we are expecting an alteration for the better. The lode in the 90 east is from 8 in. to 1 ft. wide, producing stones of ore. The stopes and pitches are looking much the same as for some time past. We are preparing to sink on the East Grenville lode as fast as possible; as soon as we have opened on it we shall be fully advised.

WHEAL GRYLLE.—E. Rogers, J. Pope, April 25: Fisher's Lode: Annie's engine-shaft is sunk 8 fms. 6 in. below the 10. In the end driving east of this shaft, in the 10, the lode is disordered by a cross-course, but is still producing good stones of tin. In this level west the lode is 1 ft. wide, yielding a little tin, but not enough to set a value on. In the same level, east of the flat-rod shaft, the lode is 6 in. wide, opening tribute ground. In the end west the lode is split in two parts, and unproductive. In the George in bottom of the adit level there is no alteration; the lode is small and poor.—Gwila Lode: In the stope in bottom of the 33 the lode is worth 25 ft. per fm. In the back of this level there are two stopes working, worth on an average 16 ft. per fm.

WHEAL HARBETH.—S. Williams, April 26: The engine-shaft is down 15 fms. below the 100; we have commenced driving the level at this depth; the lode is 6 in. wide, producing stones of copper ore; at present disordered with the cross-course. The lode in the 100 east and west is worth for tin 10 ft. per fm. The lode in the stope above the 100 is not looking so well for tin; we have in this stope a good lode for copper ore, worth for tin and copper 60 ft. per fathom. The lode in the winze sinking below the 100, on the cross-course and main lode, is worth for copper 8 ft. per fm. The lode in the 90 east end is producing stones of ore, not to value. The lode in the 30 and 10 ends is unproductive. The lode in the deep adit end is producing good stones of ore, a kindly lode.

WHEAL KITTY (Lelan).—W. Williams, April 25: Gowan Lode: The lode in Wicket's shaft, sinking below the 30, is worth 4 ft. per fm. In the 30 end, east of Wicket's shaft, at present the lode is not of much value. The lode in the winze sinking below the 30, east of Wicket's shaft, is worth 7 ft. per fm. The lode in the winze sinking below the 30, west of Wicket's shaft, is worth 7 ft. per fm. The lode in Philip's shaft, sinking below the 30, is worth 4 ft. per fathom. The lode in the 30 end, west of Philip's shaft, is producing low-price tinstuff. The lode in the winze sinking below 30, east of Philip's shaft, is worth 3 ft. per fm. The pitches on this lode are about the same value as for some time past.—North Ruscoe Lode: Bolitho's shaft is communicated to the rise; there are 2 fathoms more to make it complete to the 15; we shall lose no time in clearing and getting to sink below the 15, and open new ground. There is no particular change in any other part of the mine.

WHEAL MARY ANN.—P. Clymo, H. Hodge, J. Harris, J. Stevens, April 25: The lode in the 170, north of Pollard's shaft, is 2½ feet wide, and worth 5 ft. per fm.; in the same level south it is 2 ft. wide, and worth 4 ft. per fm. In the 160 north it is 1½ ft. wide, and worth 4 ft. per fm.; in the same level south it is 1 ft. wide, and worth 4 ft. per fm. In the 150 north it is 2 ft. wide, producing stones of ore; in the same level, south of Clymo's shaft, it is 2½ ft. wide, and worth 6 ft. per fm. There is nothing new in the 110, south of the slide. Clymo's shaft is sunk 9½ fathoms under the 150. The stopes and pitches are producing much the same as they have for some time past. We sold on April 20 two parcels of lead ore:—No. 1 (computed) 69 tons, to Mr. Thomas Somers, at 24 ft. 6s. 6d.—No. 2 (computed) 67 tons, to Messrs. the Trustees of the Trefry Estate, at 21 ft. 6s. 6d. per ton.

WHEAL MARY EMMA.—Capt. Dobie, April 23: Our operations since last report have been confined chiefly to the west side

WHEAL TREFUSIS.—J. Tregoning, April 25: The lode in the 55, driving east of Nichol's shaft, is 5 ft. wide, composed of flookan, gossan, and spar. In the rise in back of the 55, east of the sump-shaft, the lode is 2 ft. wide, worth 61. per fathom for tin; rising at 30s. per fm. In the 42, driving east of Nichol's shaft, the lode is 4 ft. wide, composed of gossan, muddle, and tin. In the end driving east and west of the cross-cut, on Gordon lode, south of the sump-shaft, at the 42, the lode is 1 ft. wide, composed of spar, peach, and a little tin, but not sufficient to value. In the 30, driving east of Nichol's shaft, the lode is 2 ft. wide, composed of gossan, flookan, and stones of copper ore. In our tribute department we have nothing new to notice.

WHEAL UNITY CONSOLS.—W. H. Reynolds, April 20: The lode in the flat-rod shaft is worth from 101. to 121. per fm., and is improving. In the 75 west the lode contains ore, and as we are nearly under the ore at the 65, we expect an improvement. The lode in back of the 75 are worth 41. and 91. per fm. respectively. In the 65, east of the shaft, there is a promising lode; and in the 55, west of the shaft, the lode is worth from 121. to 151. per fm., for 3½ fms. long, and an ore lode for some fathoms longer than this. The south lode in the adit level is 2 ft. wide, spotted with rich ore, and letting out a good deal of water, and is altogether very kindly.

WHEAL WREY CONSOLS.—P. Clymo, W. Hancock, M. Whitford, April 25: The engine-shaft is sunk 7 fms. 4 ft. under the 106. The lode in the 106 shaft is 3 ft. wide, producing 4 cwt. of lead per fm.; in the same level north it is 1½ ft. wide, producing 4 cwt. of lead per fm. In the 96 south it is 4 ft. wide, producing 6 cwt. of lead per fathom; in the winze sinking under this level north it is 2½ ft. wide, producing 7 cwt. of lead per fathom. In the 54 south it is 3 ft. wide, producing 8 cwt. of lead per fm.; in the same level north it is 2 ft. wide, producing 5 cwt. of lead per fm. In the 14 north it is 2 ft. wide, producing 5 cwt. of lead per fm. We have resumed driving the 64 north; the lode is 2 ft. wide, producing 4 cwt. of lead per fm. The stope and pitches are producing much as usual.

WORVAS DOWNS.—R. Harry, April 23: The shaftmen are still engaged in fixing drawing-lift at the 20, which will be completed and got to work this evening, when we shall at once proceed to drop the sinking lift below this level, and by the end of another week we hope to see the water in fork to the 30. It will require eight or ten days more to put the shaft in complete working order for drawing the stuff from the 20. After this work is done, the clearing of the levels will be commenced, and carried on as fast as the nature of the work will permit. The shallow adit level has been cleared east of the engine-shaft 26 fms.; here we have met with a chance lode, which has been opened on north and south of the main lode, but to what extent we are not prepared to say at present, the levels being nearly full of rubbish. At the point of intersection the lode is about 1 ft. wide, composed principally of spar, capel, plain, and tin, a very promising lode, and likely from appearances to produce fair quantities of tin in depth. Our surface operations are in regular progress, and everything going on as well as can be expected.

YARNER.—R. Barkell, April 24: In the north lode the 30 east is worth 2 tons per fathom; lode 3 feet wide, ground not so easy for driving as we have had it for some time past. We have cut through the lode in the winze, which is 4 feet wide, worth 4 tons per fathom; the said lode is standing for 3 fathoms up the winze. The south lode, in the 30 east, is producing a little ore; lode looking promising, and letting out a great deal more water than we have seen before. No alteration in the 20 west; the same remark will apply to all other places.

MINING NOTABILLIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

We gather from the various sources of information on the Mining Market that appearances are still more of the gloomy than the lively character; and were it not for the life infused into business by the extraordinary success of one or two mines, which give a considerable impetus to the whole, the aggregate of the more cheering view than it has done for many weeks of late. The tendency of metals to advance in value is also shown by a rise in tin, and such movements, once begun, are likely to continue, when it is considered that the condition of the market of late has been that of an almost absolute collapse as regards its chief ailments—that of provincial orders. On this particular point it is almost unnecessary to give explanations or assign causes, since they would lie in the serious amount of losses made by the best friends of the market—the supporters of new or progressive mines, numbers of which have gone in value to zero, after large outlays; many of them, however, it is true, from having succumbed wholly for want of the continuous support of capital; whilst their merits as mines of a legitimate character is testified to by their becoming the first shares sought after under more encouraging circumstances. The mine called KELLY BRAY may be cited as a case in point, the shares in which are now in considerable demand; whilst, as a set-off to losses, and as an encouragement to parties never to absolutely give away shares unless upon unequivocal proof of the failure of a mine to produce ore at some time or other, take the instances of EAST CARADON and EAST GREENVILLE, their aggregate market value being at this moment about 140,000l., whilst it is on record that a year or two since the former shares were absolutely valueless, and the latter a few weeks ago, one-sixth only of their present value. Such instances, assuming that the advantages of the rise have been diffused, as all mining losses are, go far to compensate supporters of British mining pursuits, it seldom happening that a mine in 5000 or 6000 shares has not a constituency of at least 200 adventurers, the majority of whom, if the theory here propounded is a sound one, would "count their gains" as well as having been forced to submit to losses on other concerns; and an inference (it is hoped a sound one) from the above facts is that capitalists should rather adhere to the market under adverse circumstances, than expend all their zeal in buying largely during periods of great excitement, which invariably, it is to be regretted, are of short duration; whilst a lapsed market may have a long course from its first points of weakness to its periods of bad to worse. At the moment of this writing the "turn" appears to have begun; and to be assured of that is to be in possession of valuable knowledge, which may be turned at once to account, upon the practical hint that holders of depreciated shares have before them two courses of action—first to attend to those in which they are not particularly interested; and second, to reduce a 51. share, which can now be bought at one-fifth of its former value, to a low average, by an additional purchase, not forgetting that during a period of nine or twelve months of depreciation the mine has, or may have, had a large sum expended upon it, and neither reasoning nor action is required, but that a share is not taller for having had a story added to it, the object of the additional work being, of course, to enhance its value in the same proportion as additional levels driven and shafts sunk in a mine add to its value by the prospective diminution of capital necessary to develop it; assuming always, however, that the undertaking is a legitimate one in all essential respects, and that so far from in the end becoming a myth it will become a mine, and like EAST CARADON (before alluded to) reward its supporters with handsome dividends.

THE COED MAWR POOL LEAD MINE, near Llanrwst, is now being developed with successful results. The returns from the boundary, the No. 1, and Waseley's lodes, though these lodes are sunk but few fms. are regular, and increasing in value with the driving and the sinking. A parcel of 12½ tons was sold at the Trefor Quay, last week, at 121. 10s. per ton, cash payment, and a further quantity of about 12 tons, consisting of round and small ore, has been disposed of this week at 131. 5s. for the former, and 121. 10s. per ton for the latter, delivered at the same quarry, and payable by cash on delivery. The last account from the mine reported that all the works were in full activity, and the ore ground on the various lodes continued to open well. The water supply was also abundant, and means were taken to increase the reserves in the reservoirs and channels, to be prepared for the possibility of a dry summer. The report from Mr. C. B. Bennett, (which has recently appeared in the *Journal*) has had, as it deserves, the attention of the directors and shareholders. Mr. Bennett inspected all the underground works at the boundary, the No. 1, and the Waseley shafts, and he decidedly advises the extension of the operations, both in the present levels and the further sinking, as certain of valuable results, the lodes seen by him bearing evidence of present value and of increasing richness in their descent. At the present depth of only 20 fms. the produce averages almost 1 ton the fathom. The fair inference is that such lodes, so regular and well defined, and so improving in the descent, will be found largely productive at a lower depth. Mr. Bennett also recommended the erection of a 50-inch cylinder engine, to command the water to a great depth, and has no doubt of highly profitable returns: in fact, he pledges himself that the mine would then become one of the richest properties in Wales. The directors, at their meeting, resolved for the present to push on the driving and the sinking to the full extent commanded by the existing water-power, which is equal to a further sinking of at least 10 fms., and, meanwhile, to concert measures for the future extension of the operations, the provision for which could be made either by applying the surplus returns from the produce in the present levels, the sale of the shares originally reserved for additional capital, or the declaration of an adequate call, as might be hereafter determined by a general meeting of the shareholders.

THE TAVISTOCK DISTRICT.—Well-wishers to mining will rejoice to find that there are signs of renewed activity and great promises of success in this district. GREAT WHEAL MARTHA, after a long struggle, is looking exceedingly well, and raising large quantities of ore, which are only recently reaching the surface, and are making profitable returns. This has been ordered, and the buildings are in course of erection. WEST DEVON (formerly Wheal Williams), an adjoining mine, has started under good auspices. The engine was put to work in the presence of a large company of mining men; Mr. Trotter, the secretary, by whose exertions a new company, with ample capital, has been formed, occupied the chair, supported by Mr. Thos. Nicholls (the Portreeve of Tavistock) as Vice-Chairman, who gave some interesting particulars of the former workings of the mine. It appears that it was first taken up when the great discovery at Devon Great Consols took place, and at such a profitable time, as that even, as was stated at the meeting, that mine could not have paid a profit to any one but the lord at similar times. The mine was again started; and had the counsels of local parties prevailed, and the operations of the mine been concentrated on some one fixed point, instead of a more diffusive and, therefore, unprofitable mode of working, it would ere this have become profitable. It remains for the present company, under better management, to reap the advantages which, in the opinion of all practical miners, including some of the agents of Devon Great Consols, cannot fail to accrue. There are also very promising results to be expected from WHEAL CONCORD, which, in addition to the lodes formerly worked on, contains those of Coliccombe. Devon Union (near Tavistock) is also evidently opening up lodes with indications of large deposits of ore in depth. Capt. Z. Williams, of Wheal Friendship, is superintending agent of this latter mine; Mr. W. S. Trotter, of Great Winchester-street, is the secretary; and it is hoped that Concord, Union, and West Devon will amply reward this gentleman for his judgment in selection and energy in carrying out these undertakings.

CRELAKE is now standing second to Devon Consols in produce and amount, having left some of our other mines in the shade. Next sampling is expected to be 500 tons copper and 50 tons lead, which will realise nearly 4000l., against 2000l. cost.

BRYNELLIN.—Captains McEwen and J. Glover, under date April 23, report:—In the adit, level with the river, two pipes of ore have already yielded over 500 tons, of an average of 8½ cwt. for copper. A third pipe of ore is known to exist eastward, before reaching the junction. A very large body of ore is expected where the three lodes meet. A trial has been made at this point, near the surface, and 2 tons of ore have been extracted from a very small space. Speaking from analogy, in a short time this mine will be a first-rate paying one. Very few can boast of yielding such quantities of ore so near the surface, and giving such indications of large bodies in depth; none better suited for transit of ore, nor with greater facilities for working. The raising of ore can be carried on simultaneously with the working of the mine, which is situated near Boddgert, close to the River Glaslyn, North Wales.

The machinery has got to work at **BRYNAMBOR MINE**, which is situated 4½ miles from the great Nant-y-Mwyn Mine, and upon the Llanfair Clydogan silver-lead lode, the ore of which mine contains 80 oz. of silver to the ton, and is now worth upwards of 200. per ton. The ore of Brynambor Mine is the richest-looking lead ever seen; there are specimens of it at the office, Crown-court, Threadneedle-street, and at the Crystal Palace.

LEAD MINING IN GLAMORGANSHIRE.—An influential company, upon the limited liability principle, is in course of formation, with a capital of 7500l., in 51. shares, for working a valuable mine, property of the parish of Llanegan, held on lease, at a royalty of 1-15, and a dead rent of 151. per annum, from Countess Dunraven and Mr. Hockwell. The geological position of the sett is regarded as highly favourable, the

strata being similar to those in which all the best mines of the district are situated. From parallel lodes adjacent large quantities of lead have been obtained at some former time, whence adequate profits are anticipated for the Glamorganshire Lead and Barytes Mine. The property has been carefully inspected and favourably reported upon by Capt. J. Hodge, of West Forey, and by the managing director, whilst the value of the ore is attested by the analysis of Mr. Ogston, of Mark-lane.

BRYN GWIOG.—A splendid course of ore has been cut in the 105 end west, by far richer than anything previously discovered in this mine.

MINING COMPANIES UNDER THE WINDING-UP ACTS.—A return has been presented to Parliament regarding every joint-stock company wound-up or winding-up under the Acts of 1848 and 1849. It gives the title of each concern, and shows the amount which the shareholders have been compelled to contribute to the liquidation. In some cases the assets were nil; and in one instance the official manager has been unable to recover even the cash expended for the requisite advertisements of the winding-up. We append the particulars of the several mining companies, from which it will be seen that the Mexican and South American Company occupies the worst place, the contributions in that instance having reached 77,289l.:

MASTER OF THE ROLLS' CHAMBERS.	
Bodmin United Mines.....	£ 2,563
Bosworth Mining Company.....	675
Cae-Cynon Mining Company.....	3,146
Dhurro Copper Mining Company.....	2,770
Liveridge Iron Company.....	—
Mandale Mining Company.....	—
Mexican and South American Mining Company.....	77,289
Mineral Court Mining Company.....	732
Nantlle Vale Slate Company.....	657
Trevens Mining Company.....	1,208
Wheal Helen Mining Company.....	51
Wylam's Steam Fuel Company.....	—
VICE-CHANCELLOR WOOD'S CHAMBERS.	
Birch Tor and Wilfrid Mining Company.....	2,108
Cwmtylle Rock and Green Lake Copper Mining Company.....	1,897
Crookhaven Mining Company of Ireland.....	4,168
Court Grango Silver-Lead Mining Company.....	150
Espar Mwyn Mining Company.....	5,692
Fat Work and Wheal Vyrine Tin Mining Company.....	81
Furdon Manor Mining Company.....	963
Great Cambrian Mining and Quarrying Company.....	3,461
Kilbricken Mines Company.....	2,475
Lake Bathurst Australasian Gold Mining Company.....	—
Mixon Great Consols Copper Mining Company.....	1,363
New Engine Coal Mining Company.....	—
Paragon and Spero Coal Mining Company.....	—
St. Denis Consols, China Clay-works, and Tin Mining Company.....	2,874
VICE-CHANCELLOR KENDERLEY'S CHAMBERS.	
Anglo-Californian Gold Mining Company.....	8,467
National Patent Steam Fuel Company.....	12,291
Wrysgan Slate and Slab Quarrying Company.....	5,180
VICE-CHANCELLOR STUART'S CHAMBERS.	
East Dean Coal and Iron Mining Company.....	782
Welsh Potash and Copper Mining Company.....	2,623

NEW IRON DISTRICT.—In another column we publish an interesting communication with reference to the great deposit of iron ore at Seend, in Wiltshire (to which we have already referred in the *Mining Journal*), from Mr. Samuel Griffiths, the well-known iron merchant, of Wolverhampton, which leaves no doubt as to the prospects of the iron-works at present established in the district. The ore surpasses, both in extent and character, the rich ironstones of any other of the colliette and green sand formations, and it is estimated that good pig-iron can be produced from it at 40s. per ton at the most. The beds are declared to be 40, and in some places, no doubt, 60 feet thick—one uniform iron-bearing stratum. Mr. S. H. Blackwell, also a first-rate authority, remarks with reference to the mines that he has seen nothing either in our own country or abroad so finely deposited and available for all practical and paying purposes as the iron mines at Seend. The ore is not of a description the value of which has to be tested, a similar deposit, though of less extent, having been already worked in France with great success, the ore being worked with no other implements than pick and shovel. The Seend deposit is estimated to contain 25,000,000 tons of ore. Mr. Griffiths is certainly entitled to much credit for having introduced so prominently to the notice of the public a most valuable iron property precisely at the time when complaints are being made that the invulnerability of our national defences is jeopardised by the use of inferior iron. The present time is also particularly appropriate for the publication of such facts as these, since, as Mr. Griffiths justly remarks, the prodigious progress made in the manufacture of iron in England during the last sixty years is an admitted fact of the highest importance; the produce of England, Scotland, and Wales, according to the best authority, during the year 1860 having been upwards of 6,000,000 tons.

THE SCOTCH PIG-IRON TRADE.—There has been a great revival in the Scotch pig-iron trade since an amelioration was first observable in the commercial prospects of the country. Thus, the shipments have expanded as follows:—

Week ending March 9.....	Tons	1861.	1860.
March 9.....	7,112	11,114	9,656
March 16.....	7,988	10,944	9,656
March 23.....	10,169	8,245	—
March 30.....	14,992	12,375	—
April 6.....	14,419	11,673	—
April 13.....	17,689	15,458	—

Considering the depression under which this important trade has long laboured, the hopes induced by these figures are extremely gratifying.

MUSEUM OF PRACTICAL GEOLOGY.—"Stratification and Order of Superposition—Fossil Remains." The lecture on Thursday evening by Mr. WASHINGTON SMYTH, F.R.S., was on the above subject. The lecturer commenced by showing that in investigating a geological section from the neighbourhood of Vesuvius or Etna accurate deductions could be formed of the volcanic changes extending over a period of centuries, and said that the same process of reasoning was equally applicable in considering deposits induced by the agency of water. This he instanced in lacustrine deposits from the influence of rivers, which bring down detritus, silt, and organic remains from the uplands, varying in degree according to the wet or dry season, and in condition from the rocks over which they pass. From an attentive examination of these sedimentary deposits we may accurately predicate the description of animal and vegetable life that existed at that period, and, at the same time, the manner in which it was entombed. Thus, if we find fresh-water shells in a perfect state of preservation we very naturally conclude they were deposited in a gradual manner, while, on the other hand, if they are of a fragmentary character, the conclusion is that the agencies at work at that particular period were more violent in degree. He now went on to consider the deposits in estuaries, and showed how the sediment was extended over vast areas. In examining the earth's crust we may divide the materials into two classes—1. Those which are deposited by the agency of water, commonly called stratified. 2. Those in which we find no such arrangement, known as igneous. The lecturer then went on to explain the term superposition, illustrating the subject by coloured blocks to represent the strata, which he said were termed conformable when the beds are parallel, and unconformable when otherwise. While treating on fossil remains he mentioned the fanciful ideas which were for a long time prevalent to explain the finding of sea-shells on the summit of mountain chains, and instanced the prominent manner in which the late Dr. Chalmers swept away these unphilosophical and sceptical conclusions. Mr. Smyth concluded by saying that as the astronomer, by the assistance of the telescope, investigates the phenomena of the stellar universe, so the geologist, by the study of physical laws, is able to decipher the history of the past.

SINGULAR PHENOMENON.—In boring for coal midway between Wakefield and Pontefract, at a depth of 140 yards, a strong smell of sulphur was perceived, impregnating the water that bubbled up in the boring-hole. The water soon reached the surface, and has been now for about a fortnight boiling, or rather (for it is only warm) bubbling furiously, and on applying a lighted paper the sulphur blazes up through the water to the height of 3 or 4 feet, presenting the appearance of a "snap-dragon" on a large scale, the boring-hole being about 5 feet square. It is estimated that a depth of 100 yards will still have to be bored before the coal is reached, but now long it may be before operations can be resumed remains to be seen. Hundreds of people have visited, and are continually visiting, the spot; the phenomenon, unprecedented as it would seem, being an object of general interest in the neighbourhood.

The amount of Australian gold known to be on the way to England is 717,500l., of which 417,000l. is due, or about due, but kept out by the easterly winds. Subjoined are the particulars:—	
Name.....	Sailed.....
Calliance.....	Jan. 8.....
Southampton.....	" 19.....
Copenhagen.....	" 28.....
Empress of the Seas.....	Feb. 2.....
Owen Glendower.....	" 2.....
Kleber.....	" 7.....
Kent.....	" 17.....
Marco Polo.....	" 18.....
Peru.....	" 18.....
Total.....	179,821 ozs.£717,500

TREATING MINERAL NAPHTHA.—In the treatment of coal naphtha so as to make the same more suitable to the naphthalizing of illuminating gas, Messrs. Launay and De Vermeire propose to pass the crude naphtha repeatedly through sulphuric acid. The naphtha is then filtered through coke, clay, and chalk, and is fitted for use. On each 100 lbs. of naphtha is mixed with—Benzole acid, ½ lb. to 2 lb.; ether, about the same quantity; alcohol, 10 to 25 lbs.; and pyroacetic spirits, about the same quantity. The whole is agitated until it becomes a homogeneous liquid.

* With this week's *Journal* we give a SUPPLEMENTAL SHEET, in which appears Papers on the Utilisation of Blast-Furnace Gases (illustrated)—"Old Bones"—Ancient Geology—Composition Steel and India-rubber Springs (illustrated)—Mining Machinery: Boring and Winding Apparatus (illustrated)—Safety Apparatus for Mine Shafts (illustrated)—The West Polmar Mining District (with plan)—Facts on the Nature and Action of Steam—Increasing Value of British North America—Productive Cargo of Coal—Literary Notices: Handy Book of Patent and Copyright Law, English and Foreign—Coal Fields of Indiana—Iron: its History, Properties, and Processes of Manufacture—Railway Construction—The Engineer's Manual of the Hydrometer.

The Mining Market; Prices of Metals, Ores, &c.

METAL MARKET—LONDON, April 26, 1861.

COPPER. £ s. d.	
Best selected.....	p. ton 101 0 0—
Tough cake.....	" 98 0 0—
Tile.....	" 98 0 0—
Burra Burra.....	" 102 0 0—
Coplaso.....	" 97 0 0—
Copper wire.....	p. lb. 0 10 - 0 10½
ditto tubes.....	" 0 11 -
Sheathing & bolts.....	" 0 11 -
Bottoms.....	" 0 10 -
Old (Exchange).....	" 0 9½—
IRON. Per Ton.	
Bars, Welsh, in London.....	6 10 0 - 7 0 0
ditto, to arrive.....	6 0 0—
Nail rods.....	7 0 0—
" Stafford, in London.....	7 7 6 - 7 15 0
Bars.....	ditto 7 10 0 - 8 0 0
Hoops.....	ditto 8 10 0 - 8 15 0
Sheets, single.....	9 0 0 - 9 15 0
Fig. No. 1, in Wales.....	2 0 0 - 0 0
Refined metal, ditto.....	4 0 0 - 5 0 0
Bars, common, ditto.....	5 7 6 - 5 10 0
Ditto, merchant, in Tees.....	6 15 0 - 7 0 0
Ditto, railway, in Wales.....	5 5 0—
Ditto, Swed., in London.....	11 5 0 - 12 0 0
To arrive.....	11 10 0—
Fig. No. 1, in Clyde.....	2 8 - 2 10 0
Ditto, f.o.b., in Tees.....	—
Ditto, f.o.b., in Tees.....	—
Staffordshire Forge Pig.....	3 10 0 - 3 12 6
Welsh Forge Pig.....	—
LEAD.	
English Pig.....	21 0 0 - 22 5 0
Ditto sheet.....	21 15 0 - 22 0 0
Ditto red lead.....	23 0 0 - 24 0 0
Ditto white.....	30 0 0 - 31 0 0
Ditto patent shot.....	24 0 0 - 24 10 0
Spanish.....	20 5 0—
BRASS. Per lb.	
Sheets.....	9½d.-10d.
Wire.....	9½d.-9½d.
Tubes.....	10½d.-11d.
FOREIGN STEEL. Per Ton.	
Swedish, in kegs (rolled).....	16 10 0—
ditto (hammered).....	17 0 0 - 18 0 0
ditto, in faggots.....	18 10 0 - 19 0 0
English, Spring.....	18 0 0 - 23 0 0
Beasmer's Engineers Tool.....	44 0 0—
Spindle.....	30 0 0—
QUICKSILVER.....	7 0 0 p. bottle
SPELTEN. Per Ton.	
Foreign.....	18 10 0—
To arrive.....	18 12 6—
ZINC.	
In sheets.....	24 0 0—
TIM.	
English, blocks.....	125 0 0—
Ditto, Bars (in barrels).....	126 0 0—
Ditto, Refined.....	127 0 0—
Banca.....	129 0 0—
Straits.....	125 0 0 - 126 0 0
TIN-PLATES.*	
IC Charcoal, 1st qua. p. bx. 1.....	9 0 - 1 10 0
IX Ditto 1st quality.....	1 15 0 - 1 16 0
IX Ditto 2d quality.....	1 6 6 - 1 8 0
IX Ditto 2d quality.....	1 12 6 - 1 14 0
IX Coke.....	1 3 4 - 1 4 0
IX Ditto.....	1 9 0 - 1 10 0
Canada pig.....	p. ton 13 0 0 - 13 10 0
In London; 20s. less at the works.....	—
Yellow Metal Sheathing... p. lb. 9½d.	—
Indian Charcoal Pigs.....	6 12 6 - 6 15 0
In London.....	—

* At the works, 1s. to 1s. 6d. per box less.

REMARKS.—This market has evinced considerable briskness during the week, and sales are reported in most metals. The low rate of discount in the money market, and the more favourable accounts from abroad, have exercised a most beneficial influence on the metal trade, which now appears to be assuming a more healthy tone than for some months past; prices for the most part show a disposition to go higher. On comparing those of the present time with the rates ruling at the corresponding period last year, they show an average decline of about 8 per cent. This, it will be acknowledged, is a very considerable difference, and it cannot be wondered at that sellers should endeavour to obtain an advance upon the present comparatively low quotations. The news of actual hostilities having commenced in America will probably have the effect of somewhat depressing the market.

COPPER.—The market for English cake, tile, and manufactured is firm, and the demand tolerably good, more especially for the unmanufactured descriptions. Foreign is a good deal enquired for, and holders are very firm, and in many cases not sellers at all present rates. Burra Burra, 102l. to 103l.; Kapunda, 101l.; yellow metal quiet.

IRON.—Some slight improvement is manifested in rails, but manufacturers are still in want of orders; the price has stiffened to 51. 5s., l.o.b. at the works. Merchant bars continue in good request, mostly for shipment to India; quotations, however, have not undergone any change as, owing to the slackness in railway bars, makers cannot keep their works fully employed; 51. 5s. at the works, 61. f.o.b. in the Thames. Staffordshire kinds, though without material alteration in price, are steadily improving, and manufacturers rather less pressing for orders. Good known brands only are saleable, the commoner kinds being neglected. Swedish bars less enquired for, price unaltered. Scotch pigs have been in tolerably active demand, and have advanced during the week to 49s., mixed numbers; since which a slight reaction has taken place, and they leave off rather lower, warrants having changed hands at 48s. 6d.; and the bad news from America will doubtless cause a further decline.

LEAD.—English pig, without being particularly in request, maintains a steady position. This is mainly owing to Government orders, as but few shipping orders are in the market. Sheets and shot are very little enquired for, and shipping orders particularly scarce. Spanish pig, 20l. to 20l. 5s. SPILTEN is rather better in price, and in fair demand. Business has been done during the week at 181. 10s., being an advance of 2s. 6d. to 5s. per ton; 181. 10s. has also been paid for arrival. Zinc steady, at 24l.

TIN.—This metal has specially attracted the attention of speculators during the week. On the 23d inst. the smelters of English announced an advance of 51. per ton, making present quotations 125l. for blocks; ingots, 126l.; bars in barrels, 127l. for refined. The demand for foreign descriptions has been very lively, and prices have rapidly increased. Business was done early in the week in Straits, at 120l.; Banca, 126l.; since which 125l. has been paid for Straits, 129l. for Banca; and many holders are indisposed to realise even at these prices, the general opinion being that still higher rates will rule in the market.

TIN-PLATES in good request. Present quotation 23s. 6d. for IC coke, and 28s. for charcoal, good known brands.

STEEL.—Swedish keg and faggot are rather neglected just at present, in consequence of the unfavourable reports from India discouraging shipments. English dull of sale.

LIVERPOOL, APRIL 25.—A fair degree of activity continues to prevail in iron, notwithstanding all opposing influences: prices are steady. Scotch pigs are quoted, No. 1, g.m.b., 48s. 6d. per ton, f.o.b. in Glasgow, nett cash. The shipments from Scotland during last week have been unusually large. Copper is firm, and little or no underselling below the nominal price of 11d. Block tin advanced on the 23d inst. 51. per ton, making the present price 125l. for common. Tin-plates are in much better request, and prices are advancing. Pig-lead quoted 20l. 15s. to 21l., but the market is dull, and sellers are open to offers.

WOLVERHAMPTON.—From Mr. S. Griffiths' "Iron Trade Circular:"

Current prices of pig iron (corrected to Thursday evening):—Staffordshire cold blast, 41. 5s.; Old Windmill End Mine, Nos. 1, 2, and 3, melters, warm air, 41.; Old Windmill End Mine Forge pig-iron, 31. 7s. 6d. to 31. 10s.; best native hydrate pigs, 31. 10s. to 41.; first-class All Mine grey forge pigs, 31. 5s. to 31. 10s.; Seend grey forge mine pig-iron, 31. to 31. 2s. 6d.; Seend mine melting pigs, 31. 10s. to 31. 15s.; good mine pigs, with a modicum of fluo-cinder, 21. 10s

WREY CONSOLS.

In 4096 shares. On the "COST-BOOK PRINCIPLE." A grant of a very extensive set has been obtained from Sir Bouchier Wrey, for 21 years, at 1-16th pence, and a rental of £10 per annum.

The grant was made to Captain W. V. Williams, who has expended about £1400 in driving levels, purchase of machinery, payment for sett, &c.

The mine is situated at Holne, Devon, and lies south of the Dartmoor granite, with lodes discovered and developed, having cross-courses and other favourable geological features, particulars of which will be gathered from the reports of the following agents:—Capt. Charles Thomas, of Deolash Mine, Cambrone; Capt. Wm. Nanorow, of East Coast Mine, Redruth; Mr. George Henwood, F.G.S.; Capt. W. Gwynne, of Holne; Capt. W. Hosking, of Ashburton; Capt. John Hancock, of Polberro Mine, St. Agnes; Capt. Robert Dunstan, of Wheal Emma, Buckfastleigh; Capt. J. F. Nicholls, of Exmouth and Frank Mills Mines, Christow.

An engine-shaft has been sunk and timbered from the surface 14 fms.; the adit level driven 55 fms. on the course of the lode, with winzes sunk and cross-cuts driven where required, as well as a roadway into the mine, with water-course and wheel-pit excavated.

A 36-foot water-wheel, with pumping crans, drawing machinery, balance beams, rods, pulleys, chafes, winches, pumps, and various other necessary machinery and materials, which are necessarily required, have been paid for, and are now on the mine, and will be the property of the shareholders.

This ground is much more easily developed than ordinary sets, as a good stream of water, with 14 fms. fall, passes down the valley, which is sufficient for pumping and winding to a great depth, as well as for crushing.

The present proprietor agrees to dispose of 3000 shares, at 10s. per share; 5s. of which is to form a working fund, and will be sufficient for erection of water-wheel and the cost of the mine for some months; the other 5s. is to be paid to the present proprietor.

Application for shares to be made to Mr. J. O. Harris, sharebroker, 24, Southernhay, Exeter (nearly nine years with Mr. C. Wescomb, Exeter), from whom prospectuses and reports can be obtained.

WREY CONSOLS MINE.

24, Southernhay, Exeter, April 18, 1861.—Sir: I beg to call your attention to the following, in connection with the enclosed prospectus of this mine:—3000 shares out of the 4096 are to be transferred on payment of 10s. per share, and of this amount 5s. per share, or £750, will form a working fund. The lease is obtained and paid for, and the water-wheel, pumps, and other materials are also paid for; there is no liability whatever to the present time, therefore the whole of the £750 will be available for future working. As the 3000 shares will represent three-fourths of the whole, it is agreed that the shareholders taking them shall appoint the purser, captain, and other officers at their first meeting. I shall be glad to receive early application for any shares you may wish to take, accompanied with a cheque for 10s. per share. In case the whole of the 3000 shares are not subscribed for, the amount paid on shares taken will be returned in full, without any deduction whatever for commission or other expenses. As a meeting is intended in about three weeks from the date hereof, an early application would oblige.

J. O. HARRIS.

THE NORTH HAFOD SILVER-LEAD MINING COMPANY (LIMITED).

Incorporated in virtue of the 19th and 20th Vics., c. 47, and 20th and 21st Vics., c. 14. Capital £12,000, in 6000 shares of £2 each. Deposit, 10s. per share. And the balance, if required, to be paid by instalments of 5s. each, at intervals of not less than three months.

SECRETARY—Mr. Thomas Spargo.

CONSULTING ENGINEER—Capt. Matthew Francis.

OFFICES,—224 and 225, GRESHAM HOUSE, OLD BROAD STREET, LONDON.

The North Hafod Silver-Lead Mining Company has been formed for the purchase and development of a rich and productive silver-lead mine, situated two miles from Devil's Bridge, thirteen miles to the east of Aberystwyth, and about a mile from the projected Manchester and Milford Haven Railway.

The grant upon which the company is founded embraces an extensive tract of ground, subject to the very moderate royalty of 1-20th.

The North Hafod Mines are immediately adjoining to, and surrounded by, some of the richest and best paying mines in the district, Cwmystwith, Fronchog, and Nant-y-Cressan. Fronchog is now giving profits to the extent of £1000 per month, Cwmystwith of £600 per month, and Nant-y-Cressan of £1800 per month.

The county of Cardigan has for several centuries been distinguished as one of the richest lead-producing districts in the kingdom, and second only to the celebrated Attledeale, Wensdale, and Derwent Mines, in the counties of Northumberland and Durham.

A beneficent Providence has been prodigal in the bestowal of mineral treasures upon this favoured county (Cardigan), and they have been successfully wrought for centuries. Numerous large fortunes have been realised by the adventurers in its mines; and a distinguished instance is established in the case of the celebrated Sir Hugh Myddleton, who derived £2000 per month from one of them, with which he prosecuted his great work of the formation of the New River from Ware to Islington, to supply the inhabitants of the metropolis with pure water.

The North Hafod Mine is situated upon the great Fronchog lode, a vein of 33 ft. in width, containing courses of lead ore of excellent quality, nearly solid for an immense length, and from 9 to 10 ft. in thickness, the masses of ore lying in gossan or divisions of conglutinated striated lode stone.

Large courses of ore are opened upon close to the boundary of the company's grant, and it is intended to adopt the most efficient and economical method of opening the lodes, by driving a cross-cut to intersect them at a low level, where immense deposits of ore are known to exist.

The necessity for the construction of a steam-engine, and the heavy expenses attendant upon working one, will be averted by the adoption of water-power, which is immediately available to an unusual extent.

And it is confidently expected by the most competent authorities that the realised profit, upon an outlay of £3000 of the capital the promoters have provided for, will enable the company to pay a liberal dividend to its shareholders; whilst intersecting the lodes at various points, by cross-cut adits, will guarantee the certainty of producing immense profits to the shareholders.

The important position of the North Hafod Mines, and the intrinsic value of the various lodes which run the extreme length of the sett, will be fully appreciated upon a perusal of the report of the consulting engineer of the company, Capt. Matthew Francis, which accompanies this prospectus.

The advance of modern science, and the progress of enlightenment, are now introducing the railway system towards and amongst the Cardiganshire mountains, where their rich silver-lead mines abound, and in a brief time those fastnesses will participate in the facilities of transport afforded to the more favoured districts of England, when the nature of the mining property of this singularly favoured province (Cardigan) will be largely enhanced.

The mining operations of the company will be under, and subject to, the immediate supervision of the eminent engineer, Capt. Matthew Francis, to whose report reference has been made.

The promoters of the undertaking, fully impressed with the great value of the North Hafod Mine, and the profitable results which must accrue from its efficient working, offer the remaining shares to the public, with a conviction that such an opportunity for the investment of capital is rarely presented for consideration.

The capital of the company is to be £12,000, divided into 6000 shares of £2 each, whereon 10s. per share is to be paid at the time of subscribing, and the remainder, or balance of £1 10s. per share, to be called for by instalments of 5s. per share each, at intervals of three months, of all of which calls 21 days' clear notice is to be given.

The undertaking to be under the immediate direction of a board of directors, to consist of not less than three or more than seven members, each of whom shall be required to qualify for office by subscribing for, and holding, 50 shares at the least in the capital of the company.

The company to be incorporated under the 19th and 20th Vics., cap. 47, and 20th and 21st Vics., cap. 14, to limit the liability of the shareholders to the amount of their respective subscriptions to the capital thereof; and the Articles of Association to define the system of management under which the company is to be conducted, and to contain provisions to secure and maintain a true and proper system of check and counter-check in its financial transactions, and in the issue and transfer of shares; and to secure power to the board of directors to commence the operations of the company, and to carry out and conduct the business thereof before the whole of the capital be subscribed, and when in its discretion it shall deem expedient.

Prospectuses, with plans and sections of the property, can be had on application to the secretary.

REPORT ON WEST BODCALL MINE.

April 15, 1861.—The Bodcall Mine is situated two miles to the east of Devil's Bridge, in Cardiganshire, and about 13 miles to the east of Aberystwyth, and about a mile from the projected Manchester and Milford Haven Railway. The lode is a very fine gossan lode, presenting occasionally stones of lead embedded in the gossan, close to the surface. It is the same lode as that of the great Fronchog, and runs 50° of magnetic east, which in that mine is 33 ft. wide, containing courses of nearly solid ore from 9 to 10 ft. in width.

The Bodcall Mine is situated just in the centre of the three dividend-paying mines of Fronchog, Nant-y-Cressan, and Cwmystwith. Fronchog is giving profits to the extent of £1000 per month; Cwmystwith of £600 per month, and Nant-y-Cressan of £1800 per month.

An adit level has been driven eastward upon the lode in the old Bodcall Mine on the Crown property, which has yielded a large quantity of lead, and shows ore close to the boundary. I have no doubt when the lode is opened in depth, which it can be either cross adits or adits along the vein, that very large bodies of ore will be discovered; in fact, it is all but demonstrated that the good course of ore discovered close to the boundary will be found at a little lower level to exist in this grant, as this is the usual inclination or dip of the bodies of ore in this part of the country. I have had considerable experience of these mines, so much so that £7500 invested under my superintendence in the immediate neighbourhood, within the last 27 years, produces a profit this year of upwards of £40,000. The trials in this country or district are very light as to the expenditure, the work is moderate hardness, averaging for levels about £5 per fm., and the water contained in it may be usually drained by means of 6-in. pitwork, and generally the ore is found by adit level, mining at a small comparative outlay. At Goginan, the small sum of £500 laid out under my directions laid open £216,000 worth of ore in the back of the adit, which made a profit of £60,000; and at Logylas, for even smaller expenditure, a discovery of lead was made in back of the adit which yielded £180,000 in ore money, and £20,000 in profit from above the adit. These facts speak more of the nature and character of the lodes of this part of Cardiganshire and their produce than any speculative arguments would do. They testify to their value and the great fortunes to be made by scientifically exploring them. I will add, as to the permanency of the mines of this district, that the Lisburne Mines, which adjoin this property, were opened under my practical agency, 27 years ago, with a working capital of £2500, I then holding myself an interest in them, which I have since disposed of, but I understand from good authority that the profits will not be less than £10,000, or 400 per cent, upon the working capital. If it were necessary, I could give evidence of the richness of the veins of this district, but I think what I have stated is sufficient to give a fair notion of the general yield of the lodes. Geologically speaking, the veins are embedded in the most ancient of the slates, called the Cambrian series of measures; and they extend to a depth of upwards of 3000 fms., and are scarcely in any instance yet brought as low as the level of the sea. The Bodcall sett is on the western side of the great ridge of hills extending from Snowdon to the peaks of Brecon, called the Snowdonian range; at this point the elevation is about 1500 ft. above the sea level, and affords excellent facilities for adit level mining and water-power. The River Mynach is capable of being diverted to the most feasible sites for the mouths of the levels of mine, and the reduction of the level of the drainage under such arrangements as may be easily made, will call almost nothing in comparison with the outlay, when these expensive operations have to be effected by steam-power. Nothing can be more favourable than the tenure of the ground, which is by a lease from Mr. Chambers, of Hafod, for a royalty of 1-20th of the produce of the ore, and for a term of 40 years. And, in conclusion, I do not know that it is possible to find a piece of ground possessing so many points of interest, such good prospects, and held so favourably anywhere besides, and I advise you to lose no time in laying the lode open, by means of facilities at your disposal, and I have no doubt but that you will soon find yourselves possessed of a very good mine at Bodcall, for a comparatively trifling outlay.

To Thomas Spargo, Esq.

MATTHEW FRANCIS.

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I have written much, and contended for a long time past, that our public companies of all kinds ought to be subject to public audit.—W. F. SPACKMAN. Cambrone: H. V. Newton.—London: Mining Journal office, 26, Fleet-street, E.C.

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Notices to Correspondents.

•• Much inconvenience having arisen, in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be regularly filed on receipt: it then forms an accumulating useful work of reference.

SAFETY-LAMPS.—The correspondence which has taken place in the Mining Journal upon the subject of safety-lamps within the last few months has certainly been sufficient to lead to the inference that after all there is nothing superior to the Stephenson lamp, an opinion which has long been entertained by those practically connected with collieries. But there still, I think, remains one point to be decided,—whether any advantage can be derived from the application of the self-locking principle to the Stephenson lamp? For my own part, I am inclined to the ordinary screw lock, which, I believe, can be so made that nothing but a proper key can open it. But whether a really reliable and, at the same time, simple means of self-locking could be devised, or has been devised, and is applicable to the Stephenson lamp, is, I think, a question which Messrs. Abbot could answer, so far as regards the Mordant principle of locking; whilst with regard to the other approved system, Mr. Waring must show that the objections are not greater than the advantages.—D. K.

ACCIDENTS FROM BLASTING WITH NAKED POWDER.—There have been several accidents of late in this county in blasting with naked powder. One poor man was killed at Par Consols on Thursday, whilst tampering for a blast, leaving a wife and six children. I have been for years protesting against the mode of blasting with naked powder; and after much study to ascertain the best mode and material, I have taken out a patent, which many mines are using, and prized by the men and mine agents as being perfectly safe and economical; but there is still existing a great lack of attention, or want of consideration, in this matter. If life and limb are not worth attention, certainly the charge of families thrown on the public should call for some reformation. At present there is just as much need of Government inspectors in our mining here as in the coal districts. As a miner, I must say it is quite necessary that Government should appoint, at least, one Inspector for the two counties of Cornwall and Devon. The blasting with naked powder and open old shafts, &c., are really a scandal, taking into account the great loss of life. I would write more on the absurdity of blasting with naked powder, but, having a patent to remedy it, I suppose it would appear I had sinister views in doing so, although I put on very little profit.—J. WENN: St. Austell, April 20.

PENHALE MOOR.—If our correspondent, Wm. Simpson, will send us his address the information he requires shall be forwarded.

ASBESTOS UNITED.—This mine is producing fair quantities of tin, and will sample in a few days from 18 to 20 tons. It should be remembered that great praise is due to the resident agent, who has displayed considerable practical knowledge of mines and minerals, and without which, it is believed, the mine would long since have ceased yielding the quantity of tin which it now does. Why is it we see no reports from this mine, as is usual in others, with both agents names attached?—MINER.

EAST GUNNIS LAKE.—"Fact" can learn the price of these shares on writing to a broker. We never deal in them, and but record the quotations as they are furnished to us.

WHEAL KITTY (St. Agnes).—At the meeting of this company, reported in last week's Journal, it was stated by the Chairman that he did not consider the mine was formerly worked in a miner-like manner; the reason assigned being that the ground driven through was not sufficiently cut up with winzes and rises. The whole of the winzes and rises at present working in the mine were set by me, and worked for some time before I resigned the management (the rise in the back of the 44 west being carried up on tribute). I am, therefore, at a loss to understand how such a remark could have been made, unless the Chairman was wrongly informed, as no change worth speaking about has been made in the working of the mine since I left it.—M. EDWARDS: St. Agnes, April 24.

ST. AUBYN MINERAL COMPANY.—"Inquirer" will find the reply quite correct; as the company is in course of winding-up in the Stannaries Court. Several intimations to that effect have appeared in the Journal, and all particulars have been fully published.

SUBSCRIBERS IN AMERICA.—Our friends in America are informed that they can obtain the Mining Journal by ordering it from a bookseller in any of the principal towns of the United States. Mr. Trübner, of Paternoster-row, is the London agent, and sends parcels by every mail to the principal booksellers and news agents there.

THE MINING JOURNAL
Railway and Commercial Gazette.

LONDON, APRIL 27, 1861.

Among the many MINERAL PRODUCTS that will be shown at the INTERNATIONAL EXHIBITION of 1862, there can be none of greater interest to this and other countries than the samples of COAL. Every information as to quality, extent of deposit, facility of working, and market price, with statistics of the quantity mined, will be of great importance. The supply from our own coal beds at home is indeed enormous, and the export trade, as we have already shown, considerable; but the economic use of coal are every day being enlarged by obtaining oil, dyes, and other chemical products therefrom. The great extension of steam navigation, ocean and coasting, the increase of steam motive-power for manufactures and machinery of various kinds, the demand for coal in different quarters for illuminating purposes, and even for fuel in many of our rapidly progressing colonies in Africa, Australia, and the East, render the more general discovery and working of fossil fuel in those dependencies of immense importance to their future successful advancement. Fortunately, therefore, is it that coal exists in our South African colonies, in New South Wales, Victoria, Tasmania, and New Zealand; in Labuan, Nova Scotia, New Brunswick, and Vancouver. In many parts of British India, too, coal has been discovered and successfully worked. Although the supply of this valuable mineral is no doubt illimitable, yet, with the extension of trade and settlement, of manufacturing industry and steam navigation, it may be useful to point out the various and increasing sources of supply, and to direct more prominent attention to them in a commercial point of view. Analyses of the special qualities of the coal would also be especially useful.

It is chiefly within the last quarter of a century that the immense increase in the factories of England, in her railways, steam-vessels, steam engines, gasometers, and foundries, have rendered coal of such great value to the advancement of our country's commerce, comfort, and civilisation. In the year 1772, PENNANT gave as a grand feature in the national commerce that 351,890 chaldrons of coal were shipped that year at Newcastle, of which about 260,000 chaldrons formed the London supply. Now the export from that port to London alone reaches 1,250,000 tons; the foreign exports exceed 7,300,000 tons; while the annual produce in the kingdom amounts to nearly 70,000,000 tons. A consideration of these figures will serve to convey some idea of the immense present and daily increasing consumption of coal. Coal is the indispensable aid to all industrial progress; and even in this metropolis we require now about 5,000,000 tons annually.

In the Cape colony deposits of coal have been found near Bargher's Dorp, and on the surfaces of several farms in the Albert district, but is too high in price to warrant much being done with it; 3s. being the lowest price paid for a muid, or sack of 2½ bushels. It is of good quality, and burns well, but being taken from the surface is not so good as that obtainable by digging to a depth of some feet, an experiment which the Dutch farmers are loth to try, being too much trouble. Some specimens obtained by digging are stated to have been found equal to many descriptions of English coal. It is found of a fair quality in the hills to the north of the Tugela River; and anthracite coal, probably as good as that in general use in the United States, is in considerable quantities near Washbank and Sunday Rivers. This coal, in other parts of the world, has lately acquired a considerable degree of importance, and a high value, being almost pure carbon, and burning without smell or smoke. There is also coal found in Natal of excellent quality, of the ordinary bituminous description, in the ravines between Biggarsburg and Umziyati River, 63 miles only distant from Maritzburg, the capital; and there is another in a small river near Biggarsburg, in lat. 28° 7', long. 29° 25', which is intersected by a vein of trap. Bishop COLESON speaks of coal being found in Natal in abundance, and of the finest quality, but as yet too far from the sea coast, with the present means of land carriage, to make it worth while to transport it in large quantities. At a farm-house on the Tugela, the Bishop saw excellent bituminous coal, the produce of the colony, which cost nothing where it was found, but which sold for 5s. the ton at Maritzburg, from the great expense of transit. In county Victoria, to the north of Durban, there is a place on the sea shore where a vein of coal crops out, and is quarried and used by the neighbouring sugar-planters. It is a surface coal, and, of course, the quality of a lower stratum would be, in all probability, vastly superior.

The Borneo and Labuan coal is chiefly absorbed in China and Singapore. The Labuan coal is of excellent quality, and lies so near the sea that it can be carried on board ship from the pit's mouth. There seems, however, of late years to have been some stoppage in the company's operations; for, while 5539 tons of coal were sold from the mines there in 1856, the sales dropped to 1100 tons in 1857, and in 1858 there were no sales at all. Whether this arose from want of labour, or whatever other cause, we cannot

The high price of labour has somewhat stayed the progress of colliery operations. The whole area of this great Australian coal field can not be less than 16,000 square miles; much of this is situated at too great a depth for profitable working, but at Newcastle, and on the banks of the Hunter River, it crops out to the surface in seams of from 4 to 10 feet in thickness. The Rev. W. B. CLARKE, a geologist of repute, states that from his own surveys and actual knowledge, as compared with its gold fields, the carboniferous portion of New South Wales is of infinitely greater value. It has been said of North America that "no part of the known world offers so great a development of carboniferous rocks;" but Australia presents a close parallel with that rich coal-bearing region, and there are enormous areas of tens of thousands of square miles occupied by these carboniferous ore beds in New South Wales and Queen's Land. Several workable and valuable coal seams exist on the Bremer and Brisbane Rivers, and along the shores of Moreton Bay. On the Brisbane River steamers can load by lying literally at the mouth of the mines, as is the case at Lake Macquarie; this phenomenon is characteristic of the coal of New South Wales. In the colony of Victoria veins of coal of superior description have been found in many localities—Western Port, Gipps Land, Moonlighthead Coast, and other places. There is also a field extending from the Barrabool Hills to Cape Otway, which presents many characteristics similar to that of Western Port. In both those fields the only seams of coal of workable thickness have been found on the sea-shore between low and high-water mark. The place where the coal crops out, on the Cape Otway shore, is within four miles of Loutit Bay; and in this respect of proximity of harbour has the advantage over the Western Port field. Coal has also been discovered at Cape Patterson, about 150 miles from Melbourne, on the south-east coast. A good workable coal field would be of the greatest importance to Victoria for the operations of its railways, factories, and steam-vessels. In South Australia the geological formation at Mount Gambia holds out the promise that coal might be found in abundance in that district by means of the needful appliances, properly directed. Coal is reported to exist in considerable quantities at King George's Sound, Western Australia; it is said to cover a space of 30 miles, and to commence at Doubtful Island Bay, close to the sea shore. There is also a good coal stratum on the Preston, near that colony. A fine field exists in the north at 28° 57' south latitude, and 113° 30' east longitude. The mine is 45 miles from Champion Bay, 42 miles from the mouth of the Irwin, and about 200 miles north of Perth.

The whole island of Tasmania is interspersed with coal formations, either bituminous or anthracitic, and labour alone is required to secure good and cheap fuel. Mining operations have been carried on in the island on a small scale. It requires something more than a mere acquaintance with the mechanical processes of mining in pits that have long been worked, to open new seams, and direct the necessary operations for extracting the mineral without waste or injury, so as to send it to a profitable market. The demand for coal that now exists in Australia, and is likely to grow every year, is far in excess of the requirements of the colonies prior to that accession of population and expansion of commerce in all its branches which was occasioned by the gold discoveries. The timber supply hitherto depended on for fuel in all the great centres of population is partially exhausted, and we have already shown the extensive use that has sprung up of steam-power in machinery and locomotion both on land and sea.

"No reasonable doubt can be entertained," writes Dr. MILLIGAN (who, by the way, is now in England), in his very elaborate Report on the Coal Fields of the East Coast of Tasmania, "that for all practical purposes of the present day, an inexhaustible supply of good coal exists at Mount Nicholas and Fingal. Whether it may be profitable to send it to market, or practicable to consume it productively on the spot, is for capitalists and speculators to consider, and probably for unforeseen circumstances at length to decide." These words were written in the year 1848. At that time Melbourne was a small village, and the River Yarra and Hobson's Bay frequented only by a few ships, taking home their annual cargoes of tallow and wool, and for many years the only staples of the district of Port Phillip, now become the important colony of Victoria. The gold fields were undreamt of; the interior of the country unexplored, except by sheep runs; and the River Murray and its tributaries unexplored, while they are now traversed by steam-boats. At that time railroads were unknown in Australia; steam-machinery had no place, save in the shape of an occasional flour-mill and none of the great ocean steamers, which now serve the uses of a developed commerce, had visited the Australian waters.

It seems, therefore, an opportune time to call attention more prominently to the vast deposits of coal that are lying unused in many of the southern colonies, to stimulate further examination and to throw together a few notes with respect to existing information and enquiry on the subject. Dr. MILLIGAN, whose report gives proof of a very careful survey and inspection of what he terms "the magnificent coal seams of the east coast," says they extend over a large area. Of the quality of this coal, he states in general terms that "it is first-rate, and will be found equal to any or all of the purposes to which the best English coal is applied." He says, again, "the coal is of the finest quality, of a deep black colour, with a rich, bright, and splendid lustre, like that of resin or jet. It is easily frangible, and ignites readily, burning in the mass with a wild ruddy flame, and a strong glare." In the immediate vicinity of Fingal lies the Steiglitz coal field, at a very practicable distance from the two shipping places of George's Bay and Falmouth. Steiglitz main seam, in the Mount Nicholas range, which is 12 feet in thickness, is a distance of 12 miles from the sea by a road already made.

The island of Tasmania resembles Wales in the character and position of its coal, which is anthracite in the southern part of both countries. Extending northerly, it gradually loses that character, by becoming semi-bituminous. It is, however, important for colonial interests that the use and value of anthracite coal should be properly made known. Mr. TAYLOR, in his "Statistics of Coal," states "that the researches of scientific men have proved that anthracite coal was formerly bituminous, having been deprived of volatile matter by the action of internal heat; leaving a greater amount of carbon, the excess of which stamps the value of coal for general purposes, except in the manufacture of gas;" and he adds that in the smelting of ores anthracite is preferred to bituminous coal, which cannot be used in the furnace in a crude state, but must first be converted into coal. Anthracite coal is obtained on Schonger Island, on the coast, where vessels may anchor within 200 ft. of the coal pit. The seam is from 6 to 7 in. thick, and consists of layers of anthracite, of a porous and coke-like character, with small layers in succession of bituminous coal. The miners state that they could afford to deliver it at the water's edge for 4s. or 5s. per ton. At South Cape a seam from 18 to 20 in. thick is found, but not worked. The coal is highly carbonaceous, but largely mixed with iron pyrites. At Richmond it crops out on the west bank of the Coal River, about one mile from a point on the estuary where vessels of 20 tons may load. The seams vary from 2 to 2½ ft. in thickness. At Newtown, within two miles of Hobart Town, the capital, anthracite coal is obtained in six shafts, at depths varying from 35 to 80 feet, and the supply sent into town is considerable. It sells from 25s to 27s. per ton. At Tasman's Peninsula, known in market as Port Arthur coal, it has been worked largely for nearly 30 years, and though a coarse anthracite coal, it throws out great heat, and is much valued for furnaces. It sells from 30s. to 35s. per ton. Bituminous coal is found at Douglas River, on the north-east coast, about four miles from the sea. Some of the seams are 8 ft. thick, and so close do they often run to the surface that in a 50-ft. shaft six seams of coal were cut. A seam of 20 in. has been worked for the Hobart Town market, where the coal is sold at 30s. to 32s. per ton. In the interior this coal crops out in the bed of the Ouse River, where the seam is 4 ft. thick, under a 4-ft. bed of pipe-clay. Bituminous coal is also obtained in the North, at the Mersey, on Port Frederic, the seams being from 2 to 3 ft. thick. On the River Don, in the same neighbourhood, it crops out of the earth in many places from 26 to 30 in. thick, and this coal is stated by Mr. SELWYN to be the best in the island. In two places where shafts have been sunk 27-in. seams have been found less than 20 ft. from the surface. For many of these particulars we are indebted to the official colonial reports of Dr. MILLIGAN and Mr. SELWYN, both eminent geologists.

An extensive bed of shale has been found at the great bend of the River Mersey, near La Trobe, which is estimated to cover 490 acres, and to have a depth of from 18 to 20 ft., equal to a quantity of 20,000,000 tons. Making, however, a liberal allowance for waste, and for walls to support the ground in mining, it is calculated that at least 10,000,000 tons might be quarried and mined with ease. This shale is found close to the surface. Where it has been exposed to the atmosphere it is of a light brown colour, but taken from a greater depth it is of the colour of dark grey; and a small piece of it held in the flame of a candle lights easily, and burns brilliantly. The extraction of oil from shales and coal has been largely extended of late years, not only in the United Kingdom, but in France, Germany, and the United States. The demand for lubricating use on railways, and in machinery, and for many manufacturing processes, is constantly increasing. Its great recommendation consists in the fact that it remains limpid and

pure after exposure to the atmosphere, and never thickens or clogs on the machinery, as ordinary oils do. The manufacture of this oil is not attended with any difficulty that would prevent its becoming a colonial industry. The process is very simple; at least, as much so as the manufacture of gas.

In New Zealand much enterprise has lately been displayed in coal mining, a matter of some importance now that there are so many coasting steamers, intercolonial steam-vessels running to Sydney and Melbourne, and that a Pacific line is projected thence to Panama by the Ottago Government. At the Motupipi coal field the fuel improves as the seam is worked; the coal is rather sulphurous, and burns rapidly, leaving a good deal of ash, but does well for steamers, if mixed with an equal quantity of English coal. At Pakawan coasters can load coal, but vessels above 200 tons have to load in the offing, or at the Pata Islands.

The preliminary step to all manufacturing enterprise is the development of the coal beds where they exist. The furnace and the steam-engine are the great industrial forces of the age; and to these coal is the staff of life. That many of our principal colonies possess this substance in abundance should satisfy them more than if they had great gold fields. With it, they can create gold by direct exchange, and by manufacture. Both by exporting the produce of their mines, and by using it in the creative processes of manufacture, they have it within their power to make a vast addition to their public wealth, and greatly augment their capability of supporting an industrial population. The collection of samples of foreign coal may be made one of the most interesting in the Exhibition, having regard to its important uses. Full details with respect to the seams, accompanied by maps and geological sections and reports, statistics of production, existing facilities for land transport or shipment, and authentic analyses, would render the collection a medium of reference of the highest interest. Especially should samples of all varieties from different localities be placed side by side for comparison, independent of the special colonial collection of objects of which they would form a part.

We have confined our observations here to the coal deposits of our southern colonies, but will direct attention hereafter to those important coal fields we possess in the western world.

NEW THEORY ON THE COMPOSITION OF STEEL.

The labours of M. Fremy on the composition of steel continue to attract the attention of the learned business portion of the public, although it is now admitted that the results of these labours are not altogether new. Messrs. Christopher Binks, McIntosh, C. Sanderson, and latterly Messrs. Ruolz and Fontenay, have each presented the question in the same light.

Amongst the communications addressed to the Academy of Sciences in Paris, at its sitting on April 1, and which were presented by their authors as antagonistic to the theory of M. Fremy, must be specially noticed those of M. E. Julien and Captain Caron. In 1852 M. E. Julien, an engineer of great ability, and known as the author of one of the best works published in France on the steam-engine, presented to the Academy several papers on the composition of steels. M. E. Julien is a partisan of the old system, that steel is a simple carburet of iron; but he regards it in an entirely new light, and gives it an eminently scientific bearing. He says steel does not consist of a pure and simple combination of carbon and iron, but in a dissolving of the carbon in the metal. Under the title of "New Theory of Cementation," Capt. Caron read in the sitting of April 1 a paper in which he directly combats the views of M. Fremy. M. Caron does not admit the presence of nitrogen in steels. He seems to have taken for the text of his work the conclusions of a German chemist—M. Marchand—who terminates an article inserted in the *Journal für praktische Chemie*, in 1850. If there is nitrogen in steel it belongs necessarily to the substances mixed with the iron, which no more form an integral part of the metal than does the scoria which one finds mixed with it. So decided an assertion will appear difficult to sustain in presence of the recently-discovered facts of M. Fremy, which oblige every description of steel to throw off ammonia when treated with a current of hydrogen gas. Is not this sufficient evidence to prove the presence of nitrogen in steel? Indeed, one is much surprised to find M. Caron contest the existence of nitrogen in this metallic product, when it is known that the particular process he himself extols for the production of steel consists in the use of cyanides, and even of the cyanhydrate of ammonia—substances peculiarly nitrogenous—M. Caron, who makes steel by means of cyanides, does not admit that nitrogen exists in steel, believing that the cyanides lose their nitrogen at high temperatures. M. Caron adds that carbonic-hydrogen makes better steel than the cyanides. But has he not made white iron and not steel by these means; and even if he did produce a little steel by these means, was it not because the iron contained a portion of nitrogen? Finally, the labours of M. Caron, which have exercised a useful influence on the studies of which steel is the object, and which show the part nitrogen acts in steel making by the employment of the cyanides in the cementation of iron, becomes incomprehensible from the moment the author denies the presence of nitrogen in steel.

To the various observations adverse to his theory M. Fremy has given the best of all answers, in following up and producing new experiments, which, in themselves, reply to the prescribed objections opposed to his ideas, and throw new light on other sides of this question. M. Fremy has proved that steel cannot be made without nitrogen, and that all manufacturers make use of the cyanide of iron without knowing it; he has even proved that the degree of steel is proportioned to the quantity of nitrogen given to the iron. In the sitting of the Academy of Sciences of April 1, which was almost entirely occupied in the discussion of this great question, M. Fremy read a new paper, in which he proved that steel is destroyed by being deprived of its nitrogen. He produced before the members of the Academy a blade of cast-steel, of which one portion only had been submitted to a current of hydrogen gas, the metal being kept at a red heat. The operation lasted three hours, and during all this time the steel disengaged ammoniacal vapours continuously, and probably other nitrogenous alkalies, whose vapours smelt like burnt horns. The part of the blade which had undergone the influence of the hydrogen, and lost its nitrogen, became entirely transformed into iron, endowed with an extraordinary malleability, exceedingly soft, and not to be altered by tempering, whilst the part of the blade which had not been denitrogenised preserved all the character of steel. Against the theory of the presence of nitrogen in steel has been raised the very serious objection that the greater portion of the steel used in the arts is manufactured by a process which seems to exclude all possible intervention of any substance of which nitrogen is a component part. The conversion of iron into steel takes place in cementing ovens, where the process is confined to heating bars of iron in the midst of a mass of pulverised charcoal. M. Fremy has taken every care to answer this objection. According to him, and as already advanced by English authorities, the air circulates continually in these cementing ovens, and the nitrogen of the air is absorbed by the metal during its passages through this mass of fuel. M. Fremy, however, produces the more conclusive fact that charcoal produced from organic matter, as used for the cementing ovens, always retains nitrogen. He submitted to a current of hydrogen gas charcoal produced from organic matter nitrogenised, and whilst under the influence of the hydrogen this coal, for a long time, disengaged ammonia. This experiment proves that organic substances nitrogenised, as those which constitute the animal and even vegetable tissues, leave by calcination a nitrogenised charcoal, which afterwards, by slow combustion, similar to that which takes place in cementing ovens, disengage their nitrogen in the shape of ammonia, under the influence of hydrogen gas, or the vapour of water. Thus, according to M. Fremy, the nitrogen useful in the manufacture of steel would be furnished from the air, and from the charcoal itself, which is always nitrogenised.

We shall, no doubt, have occasion to recur to this subject, for there is scarcely a more important question in any branch of the great manufactures.

MANUFACTURE OF CAST-STEEL.—An invention, the essential feature of which consists in melting in pots or crucibles blister-steel, bar-steel, or scrap-steel, or any mixture of these, with ores of titanium, containing besides titanic acid a large proportion of oxide of iron, such, for example, as iserine and limonite (the titanium ores being first deoxidised previously to being mixed with the steel), has been patented by Mr. R. Mushet, of Coleford. He prefers to use as most convenient, the Taranaki iron-sand from New Zealand. In preparing this iserine for his process, he mixes the said iron-sand with from one-fifth part of its weight to one-fourth part of its weight of dry and finely pulverised carbonaceous matter, such, for instance, as powdered charcoal, and he introduces the mixture thus prepared into a cementing chamber or converting furnace, such as is ordinarily used by steel manufacturers for converting bar-iron into blister-steel; or he places the ore in alternating layers with charcoal in the said cementing chamber. In either case the cementing chamber is then closed, so as to prevent access of air, and raised to a white heat, at which temperature it is maintained until the deoxidisation of the iserine is effected, which will be in the course of from about 72 to 96 hours, according to the size of the cementing or converting chamber or furnace. The deoxidised iserine is used either alone or mixed with carbonaceous matter. When the titanium ore is in lumps, he deoxidises them in a converting furnace or chamber, in order to prepare them for his process, in the fol-

lowing manner:—He covers the bottom of the cementing or converting retort or chamber with a layer of coarsely pulverised charcoal. Upon this he places a layer of iserine or limonite lumps, and upon that a second layer of charcoal, and so on until the retort or chamber is filled with alternating layers of charcoal and lumps of iserine or limonite. He then proceeds to deoxidise the said iserine or limonite as when operating upon the New Zealand iserine or iron-sand. The proportion of deoxidised iserine or limonite to be added to the steel which it is intended to melt may be varied at pleasure, but he has found that 40 lbs. of blister-steel, bar-steel, or scrap-steel, and 2 lbs. of deoxidised iserine or limonite melted together afford an excellent result. Should the resulting cast-steel prove too soft, it may be made harder by adding with the deoxidised iserine or limonite from 1 oz. to 4 ozs. of charcoal or other carbonaceous matter to every 40 lbs. of steel to be melted, but he does not confine himself to these proportions. In practice he finds it answer well to mix the deoxidised iserine or limonite when pulverised with melted pitch or resin, and he introduces the compound into the steel to be melted. The pitch is melted with the pulverised deoxidised iserine, and the compound emptied on a cold slab and broken up for use. Manganese and other fluxes may be added, but they are not essential to the success of the invention.

REPORT FROM NORTHUMBERLAND AND DURHAM.

APRIL 25.—The Coal and Iron Trades have not undergone any noticeable change since we last wrote; both are tolerably brisk, with a good prospect. Freight rates have risen considerably lately; they are now quoted from the Tyne to London 7s. per ton, and to the Mediterranean, &c., 17l. to 22l. per keel.

At the meeting of the Northern Institute of Mining Engineers, held in Newcastle, on Thursday last, Mr. Nicholas Wood, the President, occupied the chair. Two new members were proposed. A committee was appointed to confer with the committee of the Literary and Philosophical Society of Newcastle on the subject of providing accommodation jointly for the reception of fossil specimens. It will be recollected that some time ago the Northern Institute purchased the fossil specimens first collected and arranged in connection with the Fossil Flora of Lindley and Hutton, and hitherto this collection has not been removed. It is now proposed to arrange it in connection with the Museum of the Philosophical Society, at the joint expense of the two societies, additional accommodation to be provided for that purpose. The next business was the discussion of the paper of Mr. Watson "On Cement Walling;" some additional particulars were communicated by him, and also by Mr. Johnson, of Gateshead, the manufacturer of this cement. Small blocks, composed of the cement, were exhibited by these gentlemen, and details given of experiments made by them for the purpose of testing the capability of resisting pressure, and also of bearing exposure to corrosive liquids, including sulphuric acid, the most corrosive substance likely to be met with in hot upcast shafts. The most general opinion entertained of this cement appears to be that it may be adopted with success instead of freestone walling, &c. This, indeed, appears almost a certainty, as the former substance is impermeable to water, while the latter is well known to be very porous. But its adoption in lieu of metal tubbing is quite another, and more serious, question. As we have before remarked, an actual trial will alone settle this point, and it appears to deserve a trial. Mr. Watson stated that a cubic inch of the substance would sustain a pressure of 2000 lbs.; there is, therefore, no doubt of its bearing any pressure likely to be brought against it in shafts. The only difficulty appears to be the securing of the blocks together so as to form one compact mass, and in making the top and bottom of walling perfectly tight.

Another very important subject discussed was that of "Underground Ventilating Furnaces;" the papers of Mr. Armstrong and Mr. Daglish forming the groundwork for this discussion. Various opinions are entertained as to the best form and position of a furnace. Examples are given in the papers of a great variety of furnaces. They may, however, be divided into three classes:—First, those furnaces fed with return air, and worked by an open grate—that is, with a free air-way over the grate of a certain area. By far the larger portion of ventilating furnaces are upon this principle, and this particular furnace will no doubt bear the test of experience, both as regards maximum effect and economy of fuel. The size, however, of any particular furnace or furnaces can only be determined by the actual requirements of the case. The size of the shafts, area of air-ways, and extent of workings, all being important elements in the question. We quote here a passage in the able paper of Mr. Daglish, which appears to give some of the main points of the question in a few words.—"By having a large surface of fire-grate, and using a thin fire, thus reducing the resistance, and by allowing such a quantity of air to pass over the fire as is just sufficient thoroughly to saturate the resultant gases with oxygen, and cause perfect combustion, without reducing the temperature, the maximum effect will be produced." A very remarkable example is given of a furnace at Eppleton Colliery, which is stated to have given very satisfactory results. It is 26 feet long by 6 feet wide (156 square feet). It is placed with its short side to the air passage, so that "all the air which passes over the fire passes along the entire length of 26 feet, thus supplying the oxygen necessary for the consumption of the gases at an elevated temperature, and, consequently, preventing the formation of smoke." The advantages offered by this form of furnace are,—1. Economy of construction.—2. Elasticity of action; one, two, or more fires can be in operation together.—3. Continuance of action; there being no check when clearing, as in ordinary furnaces, this being always in operation by moving the fire from one end.—4. Consumption of smoke.—5. Absence of radiated heat, and coolness of passages near the furnace.

Second, a furnace fed as above with the return air, but with closed doors in front, and the air forced through the fire. By this form of furnace the temperature is raised much higher than in the ordinary furnace, and a larger portion of oxygen is supplied in a given time. But, at the same time, the contraction greatly increases the drag of the mine, and a much larger quantity of fuel is consumed, so that in an economical point of view this furnace is highly objectionable. It is evident, on a very slight examination of this furnace, that it is framed in direct opposition to the first principles of ventilation, "as the resistance of air is in direct proportion to the length and area of air-passages," and also as the square of the velocity."

Third, a furnace fed with fresh air from the down cast-shaft, the return air being carried into the upcast by another channel. This method is only pursued where the return air is in such a state that it would be unsafe to take it over a furnace. It may, therefore, be regarded as a method adopted only in extreme cases, and not to possess many recommendations to notice; certainly not at all likely to be brought into general use. The same objections apply to this as have been noticed in the last case, with this addition, that the air taken to feed the furnace is abstracted from the main intake. We can only give a slight indication here of the contents of these papers. Those who are interested in the subject may refer to the papers as published in the Transactions of the Institute: they will well repay the trouble of perusal. [They can be had from the *Mining Journal* office, as published.] The paper of the president on the "Hetton Explosion" was also discussed; but no new facts were elicited, and its discussion was again adjourned until a future meeting.

REPORT FROM YORKSHIRE, DERBYSHIRE, AND LANCASHIRE.

APRIL 24.—The general tendency of the Iron Trade is, on the whole, more favourable in many respects than it has been for several weeks past. The position of political affairs is more pacific, and the manufacturing districts of Lancashire, after suffering from the effects of strikes for several weeks, have now settled down to work again. The enquiry for iron for home consumption is on the increase, and there is a greater disposition to purchase evinced by the merchants for speculation. The latest advices from America are more hopeful, and the impracticability of the Morrill Tariff Bill is being made more manifest daily.

The Coal Trade is not so active as was anticipated, but its position generally is satisfactory, and will no doubt improve, as the strike in the Lancashire district has happily terminated. The Yorkshire coalmasters are very sanguine in getting parliamentary powers to enable them to construct the new intended mineral railway. It would give a great impetus to the export trade in coal to the Continent. The great difficulty experienced with regard to the mineral traffic, both in the Yorkshire as well as the Derbyshire district, is the great want of mineral wagons for the transit of the materials, and so rapid has been the increase in traffic that the companies have found it impossible to keep pace with the augmented requirements of the trade.

The strike of the ironstone miners in Chesterfield and the neighbourhood has terminated, and the whole of the men have returned to work, having been out one week. The ironmasters have gained the object which they have sought, of increasing the daily hours of labour to 59 hours per week. The great wish of the men was not to remain longer in the pits in the evening, and in preference to doing that they have agreed to curtail the hours agreed for meals one-half, so that now half an hour is allowed for dinner instead of an hour. We are assured by an ironmaster who has taken a prominent position in the dispute, that it was not the intention of the masters to reduce wages, or to require the men to do extra work without extra pay. The men were complaining that they could not earn a livelihood at the present rate of working, and the masters, with a view to benefit the men as well as themselves, determined to increase the number of working hours. This view was explained to the contractors, or "buttlers," who were requested to communicate the same to the men, and the result was the strike. The men, on the other hand, entertain the notion that the law will support them in not weighing more than 20 cwt. to the ton instead of 30 cwt., so that were this plan adopted, they would materially increase their pay without getting any additional mineral. The masters, on the other hand, repudiate the idea that they ever contracted to pay by the ton proper, but by measure, which was understood to mean the present quantity; if the men, therefore, insist upon weighing 30 cwt. only to the ton, the measure, the masters would immediately make a proportionate reduction in the amount of pay. The great bulk of those

out on strike were so favourably impressed with the statements of the delegates at the late public meeting that they resolved upon forming, and now have established, a Miners' Union, which it is intended to amalgamate with the Barnsley District Union. Judging from the feeling which pervades the great bulk of the men, we have little faith in the security of peace amongst the men under the new system. Hitherto the relations between the workers and their masters have been so amicable that the necessity for the formation of a Miners' Union, though frequently talked about, was never actually forced upon them, so that on the occasion of the late strike the men found themselves out of work, and without any organisation necessary to render them substantial aid. On a future occasion they intend to be better prepared.

We have no material alteration to notice in the lead mining operations of the Peak of Derbyshire. The present dry season is very favourable for work, and the miners are taking due advantage of it. The new branch railway from Rowsley to Buxton, to connect the line of communication between London and Manchester, is making rapid progress, the Midland Company being anxious to open the line for traffic without the least delay. The importance of this railway to all engaged in mining cannot be over-estimated, and we hear of several large works about to be commenced in close proximity to the line, so that in a short time the mineral riches of the Peak will have the means of exit to the markets of the kingdom.

The local share markets have been very flat during the week, and there has been little business done, owing to the general depression in trade.

The Sheffield trades are suffering severely, and a greater period of dullness and inactivity was never known in the hardware and cutlery trades. The iron and steel manufacturers are enjoying an active business at the present time, from the fact that they have in hand large Government contracts which will require some time to execute, besides an improved continental demand.

The machinists of Lancashire generally, and also in Leeds, are exceedingly busy, and in many cases the men are employed until late hours daily to keep pace with the largeness of the orders on hand, which are chiefly for shipment.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

APRIL 25.—There is nothing new in the aspect of trade. The demand for iron keeps quiet, and prices are low. The unfavourable American news has a depressing tendency. There are somewhat more enquiries, but purchasers are disinclined to give prices which make orders worth looking after. In the remarks made last week as to the limited extent to which the means of producing iron are now taxed an inaccuracy occurs. It was intended to be stated that the means of production are not being taxed probably to two-thirds, or much more than one-half, their capability, instead of "one-third," &c., as written.

Strikes against proposed reductions of wages prevail in North Staffordshire, and the remnants of the hostile feelings engendered by the horse-nail makers' strike have been recently manifested by the shameful practice of cutting the bellows of those who do not conform to the dictates of the Union. It is perfectly appalling to contemplate the loss that the community incurs by strikes, for they are, amongst one class of workmen or another, constantly existing in every manufacturing district. It is worthy of note that in the Staffordshire Potteries the men employed in the Porcelain Works are hired for a year, at certain rates, and a strike amongst them is extremely rare. There is much to be said in favour of employers recognising the trade organisations of the men, and freely communicating with them in case of any proposed reduction or advance of wages, but in most trades if the superior men, of steady habits, and possessed of superior skill as workmen, were to be engaged for a protracted period, it would tend to a more amicable settlement of terms, and would have the advantage of distinguishing a superior class of workmen, and incite others to gain admission into this class.

The Special Rules for the mines of this district under the new Act have not yet reached the last stage prior to their adoption. The new bill involves stricter provisions for the regulation of mining operations, and hence there is somewhat more difficulty in obtaining general assent to rules which must involve considerable expense in many cases.

BLASTING BY ELECTRICITY.

To effect the dislodgment of masses of rock by gunpowder explosions, charges of gunpowder have been, for centuries past, buried within the mass and ignited; but long before any electrical resources were sought for this purpose the ignition had been accomplished by a slowly-burning train. Subsequent to the discovery of electricity this agent has been pressed into service, and by the aid of very rough electrical expedients engineers have been able to ignite one gunpowder charge at a time; but the desideratum remained of igniting many gunpowder charges simultaneously. Such was the problem to which Professor Wheatstone and Mr. Abel recently turned their attention, and in which they have been successful. In the course of their experiments they tried the description of apparatus which has long been exhibited at the Polytechnic; but, notwithstanding the stupendous effects produced in the lecture-room, it did not answer in the field; they then tried galvanic-electricity intensified by transmission through a Ruhmkorff's coil, but this did not quite answer their expectations. Finally, they tried magneto-electricity, and this was found to be the most satisfactory of the whole series. As a fuse they adopted, in the first instance, the "Stratham fuse," which may be said to consist of a broken circuit, intervening between the ends of two copper wires enveloped in gutta-percha, the intervening space being filled with sulphide of copper. It is very delicate, but Messrs. Wheatstone and Abel required a fuse of still greater delicacy, and in the end discovered it. The Abel fuse may be shortly stated to be a Stratham fuse, wherein sulphide of copper takes the place of sulphide of copper, and apparently leaves little to be desired.

IMPROVED BLASTING-CARTRIDGES.—The frequent recurrence of accidents from blasting with naked powder induces us again to refer to the very valuable invention of Capt. J. Webb, of St. Austell. After many years' study to ascertain the best mode and material, Capt. Webb declares that he has attained complete success. He states that instead of the ordinary paper or cotton covers or cases, he proposes the use of cotton cloth, oiled with boiled linseed oil, or made waterproof with India-rubber, gutta-percha, or other suitable material, and makes a cylindrical case open only at one end; the gunpowder is then filled in, and the open end tied tight around the fuse. Between the tamping and the charge he introduced a loose woollen material, which is most conveniently done by binding it round the fuse immediately adjoining the case or cartridge. The effect of this is that in the event of the charge not igniting immediately, the fuse does not smoulder, but is smothered and extinguished, so that no accident can occur. The patent, he continues, has been adopted in many mines, and the invention is much prized by the men and mine agents as being perfectly safe and economical; but there is still existing a great lack of attention or want of consideration in this matter. If life and limb are not worth attention, certainly the charge of families thrown on the public should call for some reformation. At present there is quite as great a necessity for Government inspection in Cornish and Devon mines as in the coal districts. It is absolutely requisite that Government should appoint at least one inspector in the two counties of Cornwall and Devon, for the blasting with naked powder, leaving old shafts open, &c., is really a scandal to mining. If we take into account the great loss of life resulting.

INJURIES FROM COLLIERY WORKINGS.—With respect to the cases of Hamer v. Knowles, and Stroyan v. the same, recently decided in the Court of Exchequer, the facts, from the defendant's point of view, were these:—In 1833 a manufactory was erected, and in 1841 and subsequent years additional works were erected on a close. In 1842 the close, which was then under lease, was conveyed by its owner to a person who died in 1849, and whose devise, in 1851, on the expiration of the lease, conveyed it to the plaintiff (Hamer) in fee, who, previously to 1849, had acquired possession as assignee of the lease. In 1849 and 1850, Messrs. Knowles, in winning coal from the land which was near, but not immediately adjoining, the above-mentioned close, caused its surface to subside, and thus injured the manufactory. The devisees did not sustain any actual damage, as they incurred no expense, and continued to receive their full rent, and, on the sale, obtained the full value without reference to any injury (of which they were ignorant) at that time occasioned by the mining operations. Subsequently to the conveyance to the plaintiff, the mining operations of Messrs. Knowles caused a further subsidence of the manufactory, and while subsidence continued after the termination of the workings in 1852, and down to a period subsequent to August, 1855, when the present action was brought. It was admitted by the plaintiff that the mining operations were skillfully conducted, and that the weight of the manufactory did not contribute to the injury. Upon the above facts the Court of Exchequer held that Mr. Hamer was entitled to recover damages for the deterioration in value of the manufactory, the injury to its machinery, and the loss of profits, both in respect of his interest as occupier before 1851, as subsequently, and as well after the commencement of the action in 1855. For the last 20 years the manufactory has been in a transition state, every case being more onerous for the colliery worker, and more advantageous to the surface or adjoining proprietor. The current of legal authority has at last, by the decision in the above cases, developed this principle, that the owner of the surface or adjoining land is entitled to have the support of an adjoining coal seam, no matter how distant it may be, and that if such seam is worked, no matter how carefully, and an injury arises, the coal owner must pay. Such principle, though very simple, is one which sadly diminishes the value of mineral rights that are severed from the surface.

SOUTH WALES.—Our Aberdare correspondent writes as follows:—The tone and tendency of the coal trade throughout this valley continue to improve, and the fine weather, combined with an easier money market, exercise a salutary influence on manufacturing and out-of-door engagements. Indeed, so well employed are the working classes of this and neighbouring districts just now, that the late 20 years can scarcely be met with. Notwithstanding all this, there is a great cry out about the "times," and most of the neighbouring tradesmen appear to be suffering considerably from the effects of the dull state which the coal and iron trades were in a few weeks ago. There is no important change to be reported in connection with either of the principal works in this neighbourhood. A few weeks ago I made some remarks on the depressed state of the tin trade, and in doing so observed that Messrs. Booker and Co., of the Mellingriff Works, near Cardiff, had an enormous stock of packed tin on hand, and were so far at a loss for orders as to be compelled to stop making. I am now glad to be in a position to state that their extraordinary stock has been cleared, and the tin department of this extensive works is again in full operation. From over the hills reports are not more unfavourable this week than last—the coal trade being pretty brisk, and two or three of the best-managed iron-works in steady operation. During the week ending the 20th inst. the following vessels arrived from foreign parts:—*Annie Fisher*, from Calcutta, with 455 tons of copper regulus, for H. Bath and Son; *James and Mary*, from Avetia, with 440 tons of copper ore, for H. Bath and Son; *Sea Nymph*, from Antwerp, with 173 tons of fire-clay, for V. J. and Sons; *Commodore*, from St. Malo, with 130 tons of zinc ore, for D. Wynn and Co.; *Stately*, from Cuba, with 670 tons of copper ore, for the Coburn Mining Company; *Angarad*, from Dunkirk, with 115 tons of copper coins, for Vivian and Sons. Up to the same date 45 vessels have left Swansea, with 9899 tons of coal and patent fuel. Of these the following were above 300 tons:—*Sotter*, for Alexandria, with 349 tons of coal; *Ricardo Ralli*, for Corfu, with 424 tons of steam fuel; *Agilatore*, for Batoum, with 410 tons of patent coal; *Elizabeth Dawson*, for Barcelona, with 96 tons of coke, and 430 tons of Warlich's patent fuel; *Fido*, for Yarna, with 583 tons of Duffryn steam coal; *Sancristo Antonio*, for Alicante, with 540 tons of best steam coal; *Sancristo*, for Dieppe, with 330 tons of best steam coal; *Aurora*, for Barcelona, with 460 tons of Warlich's patent fuel; *St. Pierre*, for Alexandria, with 350 tons of Bewla steam coal; *Convent*, for Algiers, with 300 tons of Warlich's patent fuel.—*Swansea Herald*.

MINING IN NORTH WALES—No. II.

[FROM OUR CORRESPONDENT.]

The Minera district, in the limestone range, is probably the most important, though the Halkin Mountain district is fast becoming a rival. The mines that have had anything of a trial are proving a success. Rhosmor above the water level has given good profits, and holds out every prospect of greater success to the deep. Bryn Gwio, on an outlay of 1000*l.* in working, has turned the scale, and is already making profits, and in all probability within three months will enter the Dividend List. An important discovery was made at this mine on Monday last in the 105 yard level west; enough has not yet been seen of the lode to put a value per fathom on it, but upwards of 4 tons of lead has been broken in 4 ft. of a cross-cut, and in the bottom of the level the course of ore would appear to be 3 ft. wide—solid. West Bryn Gwio, Billins, and Silver Lake are promising undertakings, and we hear that Pentre Lygan, a very interesting piece of ground, is about to be reworked, but we purpose referring to all these, with the other mines working in this important field, in detail on another occasion. We have now to treat of the Minera district. The only portion of this extensive field for mining that has been worked to any extent is the northern part, not extending more than about two miles from the village of Minera. The mines in this locality have been worked by the Romans, and their history would fill a volume. The amount of profit that has been made, and the quantity of lead ore that has been raised, cannot now be accurately ascertained, but it must have exceeded that of any other in the principality. The Minera Mines are at present worked under the superintendence of Mr. J. Taylor, jun., and the local management of Mr. J. Darlington. Their last year of ore was 500 tons for the month, which could be doubled if the management wished it. The mine is being wrought for profits, and for a lasting mine, and certainly when shut up it will not be for want of lead, but from being overpowered with water. The mine being situated in a valley at the northern extremity of the limestone range, the whole drainage of the country to the south for a couple of miles would appear to find its way by means of swallows to the lower ground, in a similar manner to the supply of water in the Holywell, in Flintshire. No engine being capable of contending with the water in the Minera Mines, it became necessary to drain it off by a day level, which work has been successfully done by the present company. This new day level has been brought in for an immense distance, and at great cost, coming in 120 yards deep in the western part of the mine, and besides accomplishing its object in cutting off the drainage water, it has led to magnificent discoveries. The further drainage of the mine is effected by two pumping engines, one an 80-in. cylinder, and the other a 40 in. The plant is the most extensive and complete of any in the district. Some idea may be formed of the value of the courses of ore in this mine when we state that Darlington's vein, now the richest in the mines, will produce in places upwards of 20 tons of lead to the fathom. This is supposed to be the old vein, which was worked very rich further west. The adit is brought up on the main vein, and is about 80 yards to the south of Darlington's vein.

The mine is divided into 1800 shares, and selling for about 17*½* per share, or about 320,000*l.*—a large sum for a lead mine; but, considering the great resources at the command of this company, it cannot be considered dear.

On the south Minera is joined by the Park Mine, worked by a local party above the water level, and on a small scale of working, 18,000 tons of lead, yielding a profit of 182,000*l.*, has been raised, and rich courses of ore, for a great length, have gone down, only requiring the erection of machinery, or the bringing up an adit from the Minera side, which could be done to come in at a depth of 320 yards in the eastern shaft at Park; a driving of about 300 yards would effect the object, when a splendid mine would be the result. Negotiations have for a long period been carried on between the two companies and the lords, which, if not actually settled, are likely to result in a speedy settlement.

Pool Park, to the south of Park, has produced 15,500 tons, and yielded a profit of 110,000*l.* above the water level. It is still worked by the Messrs. Barton, but in a most unmineral-like style. The present end is 300 yards east of the most easternmost shaft, and the workings are almost exclusively on tribute. Nothing but rich mines could stand the treatment usually administered to mines in Flint and Denbigh (with some honourable exceptions). Were the mines of Cornwall worked in the same manner, Cornwall would in a few years be a Pool Park. Pool Park is a small mine, but it is a mine to Park and Minera, and about ½ mile south of Park. The western part of Pool Park is said to be divided from the original set, and secured by Mr. T. P. Thomas, of North Minera, as a distinct property, called Lower Sychant.

A company has been inaugurated under the management of the Messrs. Taylor to work the extensive grant of South Minera, which lies to the east and south of Pool Park, extending for nearly two miles in length, and one of the largest grants in the district. East of Pool Park, South Minera boundary is within 80 yards of the present end, so rich in Pool Park. Besides this lode, there are two other main parallel lodes, known as South Minera and Cefny-Gadlin. We shall next week more particularly refer to the ground north of Minera, &c.

THE CARDIGANSHIRE MINING DISTRICT.

The northern part of Cardiganshire has long been celebrated for the produce of its mines, bounded on the west by the sea, and on the east by the Plynymon range of mountains, from north to south, beginning at Talybont, and ranging for about 20 miles to Pontrydyddig; it affords lead and silver-lead ore in almost unexampled abundance. The slate is the Cambrian formation, and is computed by eminent geologists to be 20,000 ft. in depth, and possesses one very striking peculiarity—that is, that one of its great beds of mines runs in an exact direction from 6° to the east of south to 52° west of north magnetic, and so true is the bearing of this metallised line, that a thread held across the Geological Ordnance Map of Cardiganshire passes through the centre of upwards of a dozen extensive mines in about as many miles; the lodes vary from 3 ft. to as much as 60 ft. in width. The Welsh Potosi is even more, being in one place 84 ft. in width. The Fronchog lode is 33 ft. in width, containing masses of lead ore of considerable purity for this class of mines, and is a fine specimen of the Potosi, being a fine yellow glass, and crystallised siliceous matter. This lode is crossed with a fine yellow glass, but in general the lodes of Cardiganshire are crystallised to the surface, but not ferruginous or gossan-bearing. Neither the rock of the country or the veins contain much water, probably 100 gallons per minute would be more than the supply of the most water-bearing vein of the district, and in general the mines are drained by means of water machinery.

From public attention recently being directed to the Welsh Mines, in consequence of the great yield of some of the lodes, it seems not uncalled for to descend upon the merits of Mid-Wales, in which the Manchester and Milford Haven Railway was introduced. The mines of this district, although as anciently worked as the Roman Conquest, and mentioned by the Roman historians, did not receive any systematic attention previous to the last quarter of a century. Before that the lead produce of the country was extracted almost exclusively by means of adit levels, it apparently being then thought that the stone of which the country was composed was formed of productive beds above these water lines, or levels, and that no metal existed below, possibly from the prevailing idea of the Yorkshire and Derbyshire school of miners of that day, some of the disciples of which had the management of some of the Cardiganshire mines. About 25 years ago the system of deep mining, according to the Cornish school, was introduced. The first successful issue of this mode of trial was at Cwmystwith, a mine probably 3000 years old. A 30-ft. wheel was applied to pumping the water, instead of manual labour. The lode at some 15 fathoms below the bed of the River Ystwith formed a flat, or bed, some 6 or 7 ft. in thickness of solid metal, giving as much as 20 tons of lead ore to the fathom, worth 300*l.*, which was taken away, as far as the breaking was concerned, for 21. 10*s.* per fathom, the mine giving 11,000*l.* a-year profit. This great concentration of lodes is still working at 6000*l.* or upwards a-year profit. Fronchog, another peculiarity of large and rich lode, was also opened by a 40-ft. water-wheel; this lode was only worked for a width of 2 or 3 ft., but by dilating it was found in reality to be upwards of 30 ft. in thickness—"big," as it is called in Cornwall. Above the 24 it was found that 38,000*l.* worth of lead ore had been left, and remained in the sides of the old workings; this soon came away at a great profit, the mine still continuing to be one of the richest in Cardiganshire, and the lode is one of the finest in Wales. Logylas was soon afterwards opened by driving an adit 60 fathoms deep eastward; this passed through a sheet of ore 4 to 6 ft. in width, yielding from 50*l.* to 60*l.* worth of ore to the fathom for 60 fathoms in length, the metal being hard and comparatively solid. Logylas at once became a very profitable mine, and still continues to make profits of thousands a year. This deep adit is about to be extended. The mines of this district, although as anciently worked as the Roman Conquest, and mentioned by the Roman historians, did not receive any systematic attention previous to the last quarter of a century. 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Logylas was soon afterwards opened by driving an adit 60 fathoms deep eastward; this passed through a sheet of ore 4 to 6 ft. in width, yielding from 50*l.* to 60*l.* worth of ore to the fathom for 60 fathoms in length, the metal being hard and comparatively solid. Logylas at once became a very profitable mine, and still continues to make profits of thousands a year. This deep adit is about to be extended. The mines of this district, although as anciently worked as the Roman Conquest, and mentioned by the Roman historians, did not receive any systematic attention previous to the last quarter of a century. 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IMPORTANT TO THE IRON TRADE.—By the aid of J. BROAD'S PATENT APPARATUS FOR ECONOMISING COAL AND OTHER FUEL IN BLAST FURNACES, EVERY AVAILABLE PARTICLE OF SMALL FUEL MAY BE SO USED AS TO BE NEARLY EQUAL IN EFFICIENCY TO LARGE COAL AND COKE. —17, Belgrave-terrace, Villa-road, Handsworth, near Birmingham.

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BELL BROTHERS beg to intimate that, having become SOLE LICENSEES in the United Kingdom of P. DE VILLE'S METHOD OF PRODUCING PURE ALUMINIUM, they are now in a POSITION TO SUPPLY, from their works here, both this metal and its compound with copper, known under the name of ALUMINIUM BRONZE. —Newcastle-on-Tyne, September, 1860.

PATENT LEVER BREAK, FOR RAILWAY WAGONS, doing away with the objectionable break rack. Can be APPLIED TO EXISTING STOCK at a TRIFLING EXPENSE. Royalty moderate. Models can be seen at 34, Great George-street, Westminster; and the break in action at the works of the Railway Carriage Company, at the Peterboro' Station, on the Eastern Counties Railway; Rugby Station, London and North-Western Railway; the Cardiff Docks Station, Taff Vale Railway; and at the Works, Oldbury, near Birmingham, where all communications are requested to be sent.

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AGENTS:—Liverpool, Mr. J. McInnes; Hull, Messrs. A. H. Fleming and Co.; Southampton, Mr. J. Clark; Birmingham, Mr. Adam Dixon; Belfast, Mr. W. T. Matier, C.E.; Nottingham, Mr. G. J. Hughes; Glasgow, Mr. W. Muir; Foreign: Rio de Janeiro, Messrs. Mills Brothers and Mayor; Odessa and South Russia, Mr. W. Baxter; Hamburg, M. August Müller.

Mr. Easton has rendered steam navigation a decided service. If his fluid only effects a part of what is said in his testimonials, then it is worth a trial by every steamship owner in the world. —*Mitchell's Steam Shipping Journal*, Dec. 28, 1860.

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The work altogether forms an acceptable addition to the existing stock of mining literature, and may be commended to the attention of those who wish to extend their acquaintance with this branch of our home industry. —*Daily News*.

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Mr. Spargo's Statistics is full of information useful to parties associated either practically or commercially with mining undertakings. —*Star*.

An instructive publication, deserving of every encouragement. —*Daily Telegraph*.

We recommend this work as a guide to the mines of Cornwall and Devon. —*Chronicle*.

The pamphlet is worthy the attention of all engaged in mining speculations. —*Post*.

It contains in a compressed, but still comprehensive form, all the information requisite to guide an adventurer in the selection of mines for legitimate investment. —*Welshman*.

From these the mining speculator may arrive at a correct judgment on all mining undertakings. —*Shropshire Conservative*.

No adventurer should enter upon any mining undertaking until he has carefully studied this pamphlet. He will find it a true guide when seeking for a profitable investment. —*Durham County Advertiser*.

A work of rare merit, filled with original matter, concise but comprehensive, and will be found of inestimable value to parties desirous of investing capital in mining undertakings. —*Doncaster Chronicle*.

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It contains accurate information upon all points demanding consideration, and as the work of a practical miner may be confidently relied upon. —*Devonport and Plymouth Telegraph*.

This work will prove of great utility to all who are concerned in mining operations. —*Cheltenham Chronicle*.

This little work is of inestimable value to all persons interested in the mining operations of the country. —*Blackburn Times*.

We earnestly recommend the consideration of Mr. Spargo's book to all mining speculators. —*Hereford Journal*.

This work should be read by every man interested in mining adventures. —*Edinburgh*.

An excellent practical treatise upon an important staple of our commerce, the mines of Cornwall. —*Langport Herald*.

We recommend this pamphlet to the attentive consideration of our readers. —*Halfpenny*.

This work ought to have attentive consideration, and when acted upon will prove a safe guide to all investors in mining undertakings. —*Oldham Chronicle*.

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As a guide for the investment of capital in mining operations is inestimable. One of the most valuable mining publications which has come under our notice, and contains more information than any other on the subject of which it treats. —*Derby Telegraph*.

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With such a work in print, it would be gross neglect in an investor not to consult it before laying out his capital. —*Poole Herald*.

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A very valuable book. —*Cornwall Gazette*.

All who have invested, or intend to invest, in mines should peruse this able work. Mr. Murchison will be a safe and trustworthy guide, so far as British Mines are concerned. —*Bath Express*.

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FARRAR'S PATENT STEEL COMPANY WARDSEND STEEL WORKS, SHEFFIELD, MANUFACTURERS OF BEST CAST STEEL, MALLEABLE AND MILD STEEL CASTINGS, SUPERIOR CAST-STEEL FILES, &c., CALL THE ATTENTION OF ENGINEERS AND ALL USERS OF FIRST-CLASS STEEL TO THE GREAT SUPERIORITY OF STEEL MANUFACTURED UNDER THIS PATENT. Prices:—
First quality £50 per ton.
Second quality 40 "
Third quality 30 "
Manufactured by Wardend Steel Works, SHEFFIELD. LONDON OFFICE, 21, BOW LANE, CANNON STREET WEST, E.C. Where all communications are to be addressed.

SHORTIDGE, HOWELL, AND CO., HARTFORD STEEL WORKS, SHEFFIELD, SOLE MANUFACTURERS OF HOWELL'S PATENT HOMOGENEOUS METAL PLATES FOR BOILERS, LOCOMOTIVE FIRE BOXES, TUBES, COMBINING THE STRENGTH OF STEEL WITH THE MALLEABILITY OF COPPER. RUSSELL AND HOWELL'S PATENT CAST STEEL TUBES. McCONNELL'S PATENT HOLLOW RAILWAY AXLES. For prices and terms, apply to SHORTIDGE, HOWELL, AND CO., Hartford Steel Works, Sheffield; or Messrs. HARVEY AND CO., 12, Haymarket, London.

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MACKWORTH'S PATENT COAL WASHER, OR PURIFIER. This MACHINE WILL EXTRACT THE SHALE AND ALL HEAVY IMPURITIES FROM SMALL COAL AT A COST OF TWOPENCE PER TON. For particulars and references, apply to the makers, A. and T. FAY, Temple-gate Works, Bristol; or to Mr. Jos. RIDE, Basinghall-street, Leeds.

TO COLLIERY PROPRIETORS.—PATENT TIPPING MACHINES, TO DIMINISH THE LOSS FROM BREAKAGE IN LOADING COAL ON RAILWAY WAGONS, SHIPS, &c. ARTHUR AND JAMES RIGG, PATENTEES AND MAKERS, GEORGE STREET, CHESTER.

WIRE-ROPE TESTING. **PUBLIC TEST OF A. J. HUTCHINGS AND CO.'S PATENT WIRE-ROPE** AT LIVERPOOL, FEBRUARY 27, 1861. (From the *Daily Post* of March 1, 1861.)

On Wednesday, the 27th of February, a series of EXPERIMENTS ON WIRE-ROPE took place at the Corporation Testing Works, King's Dock. The specimens tested were manufactured by the well-known firm of A. J. HUTCHINGS AND CO., of Millwall, London, the Contractors to the Lords of the Admiralty and various foreign Governments, the character of whose rope is so well known in this country, as well as all parts of the Continent. Capt. Ducraft, of H.M.S. *Hastings*, and a number of other gentlemen connected with shipping, were present to witness the experiments, all of which were considered highly satisfactory, and every respect sustained the reputation of the manufacturers. The following are the results of the experiments:—

An 8 in. rope bore 70 tons WITHOUT BREAKING. Circumference and breaking strain.

Size.	Hutchings and Co.'s wire-rope for ships' rigging. Tested Feb. 27, 1861.	Newall and Co.'s Test of Oct. 29, 1860.	Garnock, Bibby, and Co.'s Test, Oct. 29, 1860.
2 1/4 tons	14 tons	3 tons	27 tons
2 1/2 tons	16 " "	3 1/2 tons	29 tons
3 tons	18 " "	4 tons	32 1/2 tons
3 1/2 tons	20 " "	4 1/2 tons	35 tons
4 tons	22 " "	5 tons	37 1/2 tons
4 1/2 tons	24 " "	5 1/2 tons	40 tons
5 tons	26 " "	6 tons	42 1/2 tons

N.B.—The 2 1/4, 3, and 4 in. ropes were the actual sizes tested. The remaining sizes and strains are comparative.

The above tests certified by Mr. McDonald, the Superintendent of the Corporation Testing Works, Liverpool.

PUBLIC TEST OF WIRE ROPE AT THE CORPORATION TESTING WORKS, LIVERPOOL, 29th OCTOBER, 1860. Instituted by Messrs. R. S. Newall and Co. [From the *Mineral Journal* of November 10th, 1860.]

Garnock, Bibby, and Co.	Newall and Co.	Hutchings and Co.
4 1/2 in. broke at 26 tons 10 cwt.	4 " " " " " "	4 " " " " " "
5 " " " " " "	5 " " " " " "	5 " " " " " "
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Certified by Mr. William McDonald, Superintendent of the Corporation Testing Works, Liverpool.

GARNOCK, BIBBY, AND CO., HEMP AND WIRE-ROPE MANUFACTURERS, LIVERPOOL.

JOHN STEPHENS AND SON, HEMP AND WIRE-ROPE WORKS, ASHFIELD, FALM

THE MINING SHARE LIST.

DIVIDEND MINES.

Shares.	Mines.	Paid.	Last Pr. Bus. done.	Shares.	Mines.	Paid.	Last Pr. Bus. done.	
4000	Bodford United (copper), Tavistock	2 6 8.	5 1/2	12	3 6 0.	4 0	Mar. 1861	
240	Boscan (tin), St. Just	20 10 0.	50	20	10 0.	1 10	Feb. 1861	
200	Hottelack (tin, copper), St. Just	8 0 0.	190	443	4 0 0.	2 10	Feb. 1861	
2000	Bronfild (lead), Cardiganshire [L.]	12 10 0.	25	2	4 0 0.	2 0	Jan. 1861	
200	Brynford Hill (lead), Flintshire	12 10 0.	25	14	0 0 0.	2 10	Oct. 1861	
1000	Carn Brea (copper, tin), Illogan	15 0 0.	90	263	10 0 0.	2 0	Feb. 1861	
2048	Carmarth (tin), St. Just	3 10 0.	3 1/2	0	19 4 0.	2 0	Sept. 1861	
900	Cefn Cwyr Brynno (lead), Cardiganshire	3 0 0.	31	33	9 0 0.	4 0	April, 1861	
50000	Connorree (copper, sulphur) [L.]	1 0 0.	25	478	0 0 0.	0 9	Oct. 1861	
12000	Copper Mines of England	25 0 0.	25	7 1/2	per cent.	Half-yrly.		
350000	Ditto ditto (stock)	100 0 0.	24	1	per cent.	Half-yrly.		
1055	Craddock Moor (copper), St. Cleer	8 0 0.	37	5	3 0 0.	4 0	Mar. 1861	
867	Cwm Ertle (lead), Cardiganshire	7 10 0.	16 1/2	4	8 0 0.	0 15	Mar. 1861	
128	Cwm Ertle (lead), Cardiganshire	60 0 0.	240	222	10 0 0.	5 0	Mar. 1861	
290	Darwent Mines (all-lead), Durham	300 0 0.	180	137	0 0 0.	10	June, 1861	
1024	Devon Gt. Con. (cop.), Tavist. [S.E.]	1 0 0.	345	748	0 0 0.	7 0	Mar. 1861	
358	Dolcoath (copper, tin), Camborne	128 16 0.	490	510	618	10 0 0.	8 0	April, 1861
512	East Basset (cop.), Redruth [S.E.]	29 10 0.	102 1/2	102 1/2	77	0 0 0.	5 0	Mar. 1861
6144	East Caradon (copper), St. Cleer [S.E.]	2 14 0.	20	18 1/2	0 7 0 0.	5 0	Mar. 1861	
300	East Darnell (lead), Cardiganshire	32 0 0.	67	75	10 0 0.	1 0	April, 1861	
2048	East Wheal Lovell (tin), Wendron	2 10 0.	38	0	5 0 0.	0	July, 1861	
1400	Eyam Mining Co. (lead), Derbyshire	4 0 0.	38	41	13 4 0.	1 0	Dec. 1861	
4040	Fowey Consols (copper), Tynemouth	4 0 0.	38	41	13 4 0.	1 0	Dec. 1861	
2560	Fordeale, Isle of Man, Limited (lead)	25 0 0.	35	61	8 0 0.	1 0	Dec. 1861	
4000	Frank Mills (lead), Devon	3 18 6.	4 1/2	0	5 0 0.	0 2	Mar. 1861	
486	Granby and St. Aubyn (cop.) [S.E.]	46 10 0.	20	23	0 0 0.	1 0	July, 1861	
6000	Great South Tolgus [S.E.], Redruth	0 14 6.	6	4 1/2	7 13 0 0.	5 0	Feb. 1861	
1788	Great Wheal Fortune, Breage	18 0 0.	9 1/2	10 11	0 10 0 0.	10	Mar. 1861	
5908	Great Wh. Vor (tin, cop.), Helston [S.E.]	40 0 0.	3	0	0 0 0.	0 5	Mar. 1861	
1024	Herodotus (id.), near Liskeard [S.E.]	8 10 0.	38	27 29	12 10 0.	1 15	Feb. 1861	
290	Herodotus United (lead), Flintshire	37 0 0.	31	0	12 10 0.	1 10	July, 1861	
1000	Hibernian Mine Company	92 6 0.	125	0	6 15 0 0.	15	July, 1861	
160	Levant (copper, tin), St. Just	2 10 0.	125	1091	0 0 0.	5 0	Mar. 1861	
400	Lisborne (lead), Cardiganshire, Wales	18 15 0.	125	370	10 0 0.	3 0	April, 1861	
9000	Marke Valley (copper), Cardon	4 10 0.	7 1/2	6 1/2	0 16 0 0.	5 0	Mar. 1861	
4000	Mendip Hills (lead) [L.]	3 15 0.	14	2	2 1 0 0.	2 6	May, 1861	
1800	Miners Mining Co. (L.), Wrexham	2 0 0.	180	66	15 0 0.	3 17	Feb. 1861	
29000	Miners of Ireland (cop., lead, coal)	7 0 0.	14 1/2	14 1/2	14	10 11 0 0.	4 10	Jan. 1861
440	Mount Pleasant, Mold	2 7 0.	25	0	10 10 0 0.	10	Mar. 1861	
1366	North Gribbly (lead), Flintshire	2 7 0.	25	0	10 10 0 0.	10	Mar. 1861	
6000	North Great Work, Breage	1 3 0 0.	4 1/2	0	2 0 0 0.	2 0	May, 1861	
5000	Orsedd (lead), Flintshire	0 6 8.	1 1/2	0	6 6 0 0.	0 2	Mar. 1861	
6400	Par Consols (cop.), St. Blaize [S.E.]	1 2 6.	9 1/2	8 1/2	35	19 0 0.	8 0	Jan. 1861
200	Parya Mines (copper), Anglesey [L.]	50 0 0.	0	0	5 0 0.	5 0	Jan. 1861	
200	Phoenix (copper, tin), Llanfihangel	100 0 0.	435	0	394	10 0 0.	8 0	Nov. 1861
1772	Poiborro (tin), St. Agnes	10 0 0.	39	39 41	6 6 0 0.	15	April, 1861	
1120	Providence (tin), Uny Lelant [S.E.]	10 0 0.	39	39 41	6 6 0 0.	15	April, 1861	
16	Rhoswari (tin), Uny Lelant [S.E.]	10 0 0.	39	39 41	6 6 0 0.	15	April, 1861	
512	Rosewarne United (cop., tin), Gwennap	15 0 0.	24	0	1250	0 0 0.	100	Sept. 1861
512	South Caradon (cop.), St. Cleer [S.E.]	1 6 0 0.	305	300	305	40	40 41	
512	South Tolgus (cop.), Redruth, Cornwall	8 0 0.	41	40 41	102	10 0 0.	1 0	Mar. 1861
496	South Wheal Francis, Illogan [S.E.]	18 18 0.	147 1/2	135 140	353	5 0 0.	1 10	Mar. 1861
280	Spearne Moor (tin, copper), St. Just	31 17 0.	47 1/2	0	8 15 0 0.	1 10	Mar. 1861	
910	St. Ives Consols (tin), St. Ives	8 0 0.	35	0	483	5 0 0.	1 0	Feb. 1861
9600	Tamar Con. (all-ld.), Beeston [S.E.]	4 10 0.	2	1 1/2	5 8 0 0.	2 6	Jan. 1861	
6000	Tinroff (cop., tin), Pool, Illogan [S.E.]	9 0 0.	24 1/2	5 1/2	10 8 0 0.	5 6	Feb. 1861	
6000	Trevelan (copper), Marazion	2 10 0.	24 1/2	5 1/2	10 8 0 0.	5 6	Feb. 1861	
572	Trevelan Consols (tin), St. Ives	11 10 0.	12 1/2	11 1/2	7	0 0 0.	10	Sept. 1861
200	Trumpet Consols (tin), near Helston	57 10 0.	100	0	46	4 0 0.	4 0	Feb. 1861
1024	Wendron Consols (tin), Wendron	11 13 10.	17	0	8 15 0 0.	1 0	Jan. 1861	
6000	West Basset (copper), Illogan [S.E.]	1 10 0 0.	18	17 18	21	2 0 0.	10	Mar. 1861
60	West Burton Gill (lead), Yorkshire	50 0 0.	90	0	11	10 0 0.	3 0	Oct. 1861
1024	West Darnell (cop.), Liskeard [S.E.]	8 0 0.	75	71 73	94	11 3 0.	2 10	Mar. 1861
256	West Darnell (copper), Gwennap	37 0 0.	62	0	45	0 0 0.	1 0	May, 1861
6100	West Fowey Consols (tin and copper)	5 0 0.	5	0	0 12 0 0.	2 0	Jan. 1861	
512	Wh. Saron (cop.), Camborne [S.E.]	47 10 0.	350	345 355	258	10 0 0.	10	April, 1861
512	Wh. Saron (copper), Illogan [S.E.]	5 2 6.	100	95 100	258	10 0 0.	2 0	April, 1861
256	Wh. Saron (copper), Redruth [S.E.]	5 0 0.	107 1/2	112 1/2	927	0 0 0.	2 0	Mar. 1861
500	Wh. Saron (copper), Gwennap [S.E.]	180	180	180	89	10 0 0.	5 0	April, 1861
2000	Wh. Saron (copper), Penryn	2 5 0 0.	8	0	0 10 0 0.	10	Feb. 1861	
128	Wh. Saron (copper), Devon	50 0 0.	90	0	2400	10 0 0.	5 0	Feb. 1861
512	Wh. Saron (copper), Liskeard	3 10 0 0.	18	0	10	10 0 0.	1 0	Feb. 1861
1024	Wh. Saron (copper), Liskeard	3 10 0 0.	18	0	10	10 0 0.	1 0	Feb. 1861
4900	Wh. Saron (copper), Liskeard	3 10 0 0.	18	0	10	10 0 0.	1 0	Feb. 1861
496	Wh. Saron (copper), Liskeard	3 10 0 0.	18	0	10	10 0 0.	1 0	Feb. 1861
100	Wh. Saron (copper), Liskeard	3 10 0 0.	18	0	10	10 0 0.	1 0	Feb. 1861
1024	Wh. Saron (copper), Liskeard	3 10 0 0.	18	0	10	10 0 0.	1 0	Feb. 1861
80	Wh. Saron (copper), Liskeard	3 10 0 0.	18	0	10	10 0 0.	1 0	Feb. 1861
1040	Wh. Saron (copper), Liskeard	3 10 0 0.	18	0	10	10 0 0.	1 0	Feb. 1861
8000	Wh. Saron (copper), Liskeard	3 10 0 0.	18	0	10	10 0 0.	1 0	Feb. 1861

(* Dividends paid every two months. † Dividends paid every three months.)

MINES WITH DIVIDENDS IN ABEYANCE.

700	Aberdorey (silver-lead), Merioneth	2 10 0.	30	0	0 10 0.	10	Mar. 1859	
5120	Alfred Consols (cop.), Phillack [S.E.]	1 17 1.	2 1/2	2 1/2	20	3 0 0.	2 6	April, 1859
1624	Blaithwaite (tin), St. Just	11 8 0.	12	0	12	5 0 0.	6 0	Jan. 1858
2000	Brightwell & Froggatt Grove, Derbysh.	3 0 0.	3 1/2	0	3 0 0.	3 0	Apr. 1858	
2500	Central Miners (lead) [L.]	0 15 0.	5 1/2	0	0 4 0 0.	4 0	Sept. 1859	
6000	Charlotte United, Farnhamthorpe	1 16 0.	3	1	0 13 0 0.	1 6	Sept. 1859	
1024	Great Central (copper), Llanerch	0 6 0.	12	0	0 13 0 0.	6 0	Sept. 1857	
256	Curraghmore (cop., tin), Camborne	20 0 0.	85	0	85	0 0 0.	2 0	June, 1857
256	Copper Hill (copper), Redruth	48 0 0.	87 1/2	0	2 10 0 0.	2 10	Sept. 1859	
4076	Devon and Cornwall (copper)	4 16 0.	6	0	0 10 0 0.	2 6	Feb. 1859	
672	Ding Dong (tin), Gwilt	37 14 0.	11 1/2	8 10	16	7 0 0.	1 10	Mar. 1857
12800	Drake Walls (tin, copper), Calstock	2 1 0.	1	1	0 13 0 0.	0	Sept. 1857	
2048	East Falmouth (all-ld.), Kenwyn, Kea	2 10 0.	2 1/2	0	0 7 0 0.	2 6	Jan. 1858	
128	East Pool (tin, copper), Pool, Illogan	24 6 0.	400	0	308	0 0 0.	2 10	Aug. 1858
1024	East Wheal Margaret (tin, copper)	11 17 0.	6	0	0 5 0 0.	8 0	Jan. 1854	
6000	General Mining Co. (cop., id.)	11 17 0.	6	0	0 5 0 0.	8 0	Jan. 1854	
119	Great Work (tin), Gernoe	100 0 0.	110	0	221	10 0 0.	10	June, 1853
6000	Hingston Down Con. (cop.), Cals. [S.E.]	4 15 0.	2 1/2	0	2 16 0 0.	2 6	Nov. 1856	
5000	Kelly Bray (lead, copper), Callington	4 1 6.	1 1/2	0	0 6 0 0.	2 0	Feb. 1856	
20	Lacey Mining Company, Isle of Man	100 0 0.	1200	0	1420	0 0 0.	50	June, 1857
470	Newtownards Mining Co., Co. Down	50 0 0.	35	0	58	0 0 0.	1 0	Sept. 1859
5000	North Dolcoath (copper), Camborne	2 2 6.	1 1/2	0	0 5 0 0.	2 6	June, 1859	
1000	North Hoker (copper), Camborne	16 0 0.	19	18 19	167	0 0 0.	4 0	Sept. 1859
1024	Rosewarne United (cop., tin), Gwennap	10 10 0.	0	0	2 10 0 0.	10	Oct. 1859	
1320	South Cranich (copper), St. Austell	19 0 0.	285	98 108	60	0 0 0.	20	June, 1855
20000	St. Day United (tin and cop.), Redruth	2 6 0.	3 1/2	0	0 3 0 0.	1 0	Feb. 1858	
400	United Mines (copper), Gwennap	50 0 0.	40	30 35	80	5 0 0.	2 10	April, 1856
20000	Valley of Towry (lead), Carmarthen [S.E.]	0 13 6.	98	38 98	0 5 0 0.	1 0	July, 1858	
1024	West Providence (tin), St. Erth	14 15 0.	3 1/2	0	33	19 0 0.	10	April, 1857
240	Wheal Bai (tin), St. Just	15 0 0.	16	0	4 0 0.	1 0	Feb. 1859	
4096	Wheal Edward (cop.), Calstock [S.E.]	7 6 0.	2 1/2	2 1/2	0 5 0 0.	5 0	Nov. 1858	
1024	Wheal Gwilt (tin), Gwilt	4 12 0.	1 1/2	1 1/2	0 18 0 0.	7 6	Nov. 1858	
4900	Wheal Kitty (tin), St. Agnes	4 12 0.	1 1/2	1 1/2	0 18 0 0.	7 6	Nov. 1858	
490	Wheal Lovell (tin), Wendron	33 0 0.	7	1 1/2	31	0 0 0.	1 0	Sept. 1856
1024	Wheal Margery (tin), Wendron	15 3 0.	7 1/2	0	0 10 0 0.	10	May, 1860	
396	Wheal Saron (tin, copper), Camborne	58 10 0.	80	65 70	131	15 0 0.	10	Dec. 1859
1022	Wheal Tremayne (tin, cop.), Gwennap	12 2 6.	6	0	10 2 6 0.	7 6	Jan. 1854	
4096	Wheal Wrey Consols (lead), St. Ives	3 1 6.	1 1/2	1 1/2	2 12 6 0.	2 6	Dec. 1857	

FOREIGN MINES.

2464	Burra Burra (cop.), South Australia	5 0 0.	130	0	260	0 0 0.	5 0	Feb. 1861
12000	Cobre Copero Co. (cop.), Cuba [S.E.]	40 0 0.	41	40 41	96	12 0 0.	2 0	Jan. 1861
10000	Copiapu Mining Company, Chile [S.E.]	16 0 0.	10	0	6 8 0 0.	8 0	Jan. 1861	
10000	East Indian Coal, Calcutta [L.]	10 0 0.	10	0	7 1/2	per cent.	Yearly.	
70000	English and Australian [S.E.]	5 0 0.	3 1/2	0	1 2 6 0.	5 0	Feb. 1861	
25000	Gen. Mining Assoc., Nova Scotia [S.E.]	30 0 0.	24 1/2	24 1/2	17	5 0 0.	15	Jan. 1861
4000	Kapunda (copper), South Africa [S.E.]	0 0 0.	2 1/2	2 1/2	8	2 10 0 0.	6 8	Mar. 1861
16000	Linares (id.), Pozo Ancho, Spain [S.E.]	0 0 0.	2 1/2	2 1/2	8	2 10 0 0.	6 8	Mar. 1861
10000	Lusitania (copper), Portugal [S.E.]	2 0 0.	2 1/2	2 1/2	0 17 3 0.	2 6	Aug. 1860	
108815	Marquette and New Granada [S.E.]	1 0 0.	1 1/2	1 1/2	0 9 6 0.	6 2	July, 1859	
100000	Port Phillip (gold), Clunes [S.E.]	1 0 0.	3 1/2	3 1/2	0 3 0 0.	1 0	Jan. 1860	
11000	St. John del Rey [L.], Brazil [S.E.]	15 0 0.	31 1/2	31 1/2	40	15 0 0.	2 0	Dec. 1860
20000	West Canada Mining Company [L.]	1 0 0.	1 1/2	1 1/2	0 2 0 0.	2 0	June, 1860	

FOREIGN MINES WITH DIVIDENDS IN ABEYANCE.

MINES WITH DIVIDENDS IN ABEYANCE.

700	Aberdovey (silver-lead), Merioneth	1 10 0.	30	0	0 10 0 0.	10	Mar. 1859
5120	Alfred Consols (cop.), Phillack [S.E.]	2 17 1/2.	2 1/2	0	20 3 0 0.	2 6	April, 1859
1824	Balteswidden (tin), St. Just	11 5 0.	12	0	12 0 0 0.	0	Jan. 1854
1200	Brightside & Froggatt Grove, Derbyshire	3 0 0.	3 1/2	0	3 0 0 0.	0	April, 1856
2500	Central Miners (lead) [L. & S.]	0 18 0 0.	5 1/2	0	0 4 0 0.	0	Sept. 1859
6000	Charlotte United, Perranuthnoe	1 16 2 1/2.	1	7 1/2	0 13 0 0.	1 6	Sept. 1859
6000	Collieries (copper), Lamerton	5 0 0.	12	0	3 5 0 0.	0	Dec. 1857
256	Conduff (cop., tin), Camborne	20 0 0.	85	0	85 0 0.	2 0	June, 1857
256	Copper Hill (copper) Redruth	48 0 0.	87 1/2	0	210 0 0.	2 10	Sept. 1859
4076	Devon and Cornwall (copper)	4 16 3 1/2.	6	0	10 0 0.	2 6	Feb. 1859
672	Ding Dong (tin), Guisla	37 14 0 0.	11 1/2	8 10	16 7 6.	1 10	Mar. 1857
12800	Drake Walls (tin, copper), Calstock	2 1 0.	1	7 1/2	0 13 0 0.	2 0	Sept. 1857
428	East Falmouth (all-ld.), Kenwyn, Kea	2 10 0 0.	2 1/2	0	0 7 6 0.	2 6	Jan. 1858
124	East Pool (tin, copper), Pool, Illogan	24 5 0 0.	400	0	305 0 0.	2 10	Aug. 1858
1024	East Wheal Margaret (tin, copper)	11 17 6.	6	0	0 5 0 0.	0	Jan. 1854
6000	General Mining Co. for Ire. (cop., id.)	4 0 0.	5 1/2	6 1/2	1 0 0.	2 3	June, 1853
119	Great Work (tin), Germoe	100 0 0.	110	0	221 10 0.	7 10	Feb. 1857
6000	Hillingdon Down Con. (cop.), Cais. [S.E.]	4 15 6.	2 1/2	0	216 0 0.	2 6	Nov. 1856
5000	Kelly Bray (lead, copper), Callington	4 1 6.	1 1/2	1 1/2	0 6 0 0.	2 6	Feb. 1860
20	Laxey Mining Company, Isle of Man	100 0 0.	1200	0	1420 0 0.	0	June, 1857
470	Newtownards Mining Co., Co. Down	60 0 0.	35	0	86 0 0.	1 0	Sept. 1858
5000	North Dolcoath (copper), Camborne	2 2 6.	1 1/2	0	0 5 0 0.	2 6	June, 1859
1000	North Roskear (copper), Camborne	16 0 0.	19	18 19	157 0 0.	4 0	Sept. 1859
1024	Rosewarne and Herland United	1 0 0.	3 1/2	0	2 10 0 0.	10	Oct. 1859
12000	Sorridge Con. (cop.), Whitechapel [S.E.]	0 14 0 0.	98	108	0 10 0 0.	2 6	July, 1857
128	South Crinola (copper), St. Austell	19 0 0.	285	0	60 0 0.	20	Oct. 1855
20000	St. Day United (tin and cop.), Redruth	2 5 0 0.	3 1/2	3 1/2	0 3 6 0.	1 0	Feb. 1858
400	United Mines (copper), Gwennap	60 0 0.	40	30 35	80 5 0.	2 10	April, 1860
20000	Valley of Towry (lead), Carmarthen [S.E.]	0 13 6 0.	98	88	0 5 0 0.	1 0	July, 1858
1024	West Providence (tin), St. Erth	14 15 0 0.	3 1/2	0	33 1 9 0.	10	April, 1857
204	Wheal Bal (tin), St. Just	15 0 0.	16	0	4 0 0 0.	1 0	Feb. 1859
4096	Wheal Edward (cop.), Callington [S.E.]	7 7 0.	2 1/2	2 1/2	0 5 0 0.	0	Mar. 1858
1024	Wheal Grylls (tin), Perranuthnoe	0 2 6 0.	2 1/2	0	1 12 7 0.	7	Nov. 1858
8000	Wheal Lloy (tin), St. Agnes	4 12 6.	1 1/2	1 1/2	0 18 6 0.	2 0	July, 1860
480	Wheal Lovell (tin), Wendron	33 0 0.	7	0	31 0 0.	1 0	Sept. 1856
1024	Wheal Margery (tin, copper)	15 0 0.	3 1/2	0	0 10 0 0.	10	May, 1856
396	Wheal Saron (tin, copper), Camborne	18 10 0.	80	65 70	131 15 0.	1 10	Dec. 1859
1022	Wheal Tremayne (tin, cop.), Gwinear	12 2 6.	5	0	10 2 6.	7 6	Jan. 1854
4096	Wheal Wrey Consols (lead), St. Ives	3 1 6.	5 1/2	5 1/2	0 2 12 6.	2 6	Dec. 1857

FOREIGN MINES.

2464	Burra Burra (cop.), S.uth Australia.	5	0	0.	130	0	260	0	0	0	Feb. 1861
12000	Cobre Copper Co. (cop.), Cuba [S.E.]	40	0	0.	41	40	96	12	0	0	Jan. 1861
10000	Copiapu Mining Company,Chil[S.E.]	16	0	0.	10	0	6	8	0	0	Jan. 1861
15000	East Indian coal, Calcutta [L.]	10	0	0.	10	0	7 1/2	per cent.			Yearly.
10000	English and Australian [S.E.]	2	10	0.	2 1/2	0	17	2	6	0	Feb. 1861
25000	Gen. Mining Assoc., Nova Scotia [S.E.]	2	10	0.	2 1/2	0	17	5	0	0	Jan. 1861
68000	Kapunda Mining Co., Australia [S.E.]	1	0	0.	2 1/2	0	0	6	0	0	Dec. 1860
15000	Linares (id.), Pozo Ancho, Spain [S.E.]	3	0	0.	2 1/2	0	8	3	10	0	Mar. 1861
10000	Lustanlian (of Portugal) [S.E.]	2	0	0.	2 1/2	0	0	17	3	0	Aug. 1860
108216	Marquitta and New Granada [S.E.]	1	0	0.	1 1/2	0	0	9	6	0	July, 1860
100000	Port Phillip (gold), Clunes [S.E.]	1	0	0.	1 1/2	0	0	3	0	0	Jan. 1860
11000	St. John del Rey [L.], Brazil [S.E.]	15	0	0.	31 1/2	31 32	40	15	0	0	Dec. 1860
20000	West Canada Mining Company [L.]	1	0	0.	1 1/2	0	0	2	0	0	June, 1860